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UNITED STATES NAVAL INSTITUTE PROCEEDINGS.

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

ALMA MATER.

By LIEUTENANT RIDGELY HUNT, U. S. Navy (Retired).

"So much, dear liege, I have already sworn:
That is, to live and study here three years."
—*Love's Labour Lost.*

FOREWORD.

"Some said, 'John, print it,' others said, 'Not so.'
Some said, 'It might do good,' others said, 'No.'"
—*Bunyan.*

The following article was nearly completed before the Wainwright Board of Seagoing Officers submitted its report on Naval Academy affairs. Some reference, however, has been made to the contents of that report, but no attempt has been specifically made to discuss the recommendations submitted by that board.

INTRODUCTION.

"Speak to me as to thy thinkings,
As thou dost ruminate, and give thy worst of thoughts
The worst of words."
—*Othello.*

"Once upon a time" a Secretary of the Navy was reported to have complained of the difficulty of carrying out the wishes of naval officers, because of the contradictory nature of the recommendations they made to him, the apparent antagonism of naval

officer to naval officer and the arbitrary position each assumed in stating his position, and in general, because of the naval officer's way of looking at things, a way which seemed to the Secretary to be somewhat different from the point of view commonly held by other similarly well educated men. The cause of this the Secretary was inclined to ascribe to the kind of knowledge naval officers imbibed while they were being trained at Annapolis.

What is our own opinion? Do we men of the navy who have been some time afloat find that in our conduct of affairs, whether at sea or on shore, whether official or personal, our usefulness is impaired and our importance diminished because of the training we received at Annapolis? Are we agreed, one with another, in thinking that because of the way we have been brought up by our Alma Mater, because of the discipline, the influence, and the surroundings at Annapolis, we are not quite as good men, socially, morally and professionally (using the three words in their broadest significance) as we would like to be, as perhaps we might be, had our "young days of gathering flowers" been differently ordered? The aim and object of this paper is to endeavor to deal somewhat with these young days and the flowers we gathered in the garden of our Alma Mater.

We are not to consider how we have wasted our opportunities, for that we have done so, being human beings, is at once conceded; rather are we to consider how our opportunities, with the shaping of which we had little or nothing to do, have perhaps wasted us. Our subject is the United States Naval Academy, Annapolis, Maryland; not the grounds, nor the buildings, nor the environment, though many words pleasant and unpleasant may be said of them, but the human elements that compose the Academy—the midshipmen, the instructors, the disciplinarians, and the activities pertaining to these lives. No extended description of the development of the Academy will be attempted, neither will the many, very many, excellent features of the training and teaching be held up to view, howsoever admirable they may be. Instead I shall assume the ungracious task of calling attention, in a more or less fragmentary way, to some of those components of Naval Academy life which seem to me, after long thinking about them, to be less commendable than they might be, in the hope that your minds may be set to thinking about our Alma Mater. For into the making of a midshipman there enter some factors which

the light of other days shows us might perhaps be changed or modified. If to harken to these matters you will seriously incline your ear, talk about them, take some interest in them, and, as a consequence, exert your energies towards bettering them, the object of the disjointed suggestions now to be submitted for your consideration will be attained.

HISTORICAL.

"Build me straight, O worthy Master!
Stanch and strong, a goodly vessel,
That shall laugh at all disaster,
And with wave and whirlwind wrestle!"

—*Longfellow.*

Some years before the United States Naval Academy became a permanent institution under the direct care and protection of the government, the fact was recognized that midshipmen, if they were to become efficient commissioned officers in the navy, must be educated. Accordingly nautical schools were established in a few of the larger seaports of the Atlantic coast, under the patronage of the navy, but not as integral parts of that service. Attendance at them was not compulsory and the number of pupils was small. In 1838, however, a regular naval school was organized at the Naval Asylum, Philadelphia, though without Congressional authorization; and thither a few years later went the celebrated mathematician William Chauvenet as professor in charge. He drew up a plan for the conversion of the institution into a regularly organized school in which all the subjects necessary to the education of the naval officer should be taught by competent instructors. This was the germ of the future Naval Academy. Professor Chauvenet's program provided for a two-year course of study at the Naval Asylum, and orders were issued by the Secretary of the Navy to the governor of the Asylum to carry it into effect. But these orders were subsequently revoked in deference to the representations of naval officers who thought that the midshipmen could not be spared from service at sea to attend a two-year course on shore—just as recently there was a three-year course instead of a four-year course because of the shortage of officers. However, the important suggestion was then made that there was sufficient power vested in the Navy Department, without recourse to Congress, to establish a national naval school adequate to all the necessities.

About this time the introduction of steam as the motive power for ships directed attention to the advisability of educating naval officers in this branch of their profession as well as in the older subjects of seamanship and navigation; also the attention of the press and people was called to the demoralization of the whole service incident to the severe discipline, the favoritism in the appointment of midshipmen, and the neglect of the education of the young officers. There no longer remained any doubt that a radical change in the appointing, teaching, and training of youth who were to become officers was an imperative necessity, if the navy were to survive. Congress, therefore, was appealed to; but failing to agree on any measure, nothing tangible resulted. Now it was, writes Park Benjamin, that "George Bancroft of Massachusetts —scholar, historian, orator and statesman—became Secretary of the Navy, March, 1845. When he left that office eighteen months later the naval school of the United States was in full operation at Annapolis, Maryland." The site chosen for the school was an old army post known as Fort Severn, which Mr. Bancroft secured without calling on Congress for permission or assistance. Then with the aid and advice of a board of naval officers a course of studies was agreed on; Commander Franklin Buchanan was named as the first superintendent; and with 50 pupils and an academic staff of eight instructors, the formal opening of the United States Naval School—as it was then called—took place at Annapolis on October 10, 1845.

Nothing remains at Annapolis to-day to remind us of what our Alma Mater looked like in 1845, some sixty-odd years ago, nothing except plain old Fort Severn itself. That is permitted to stand as a memento of "auld lang syne," though it certainly presents an incongruous appearance amidst its surroundings of magnificent ornate buildings. Everywhere have come change and expansion. Now the new midshipmen's quarters, named Bancroft Hall, is a great stone structure described by Baedecker as the largest granite building in the world—a description which may give satisfaction to some people—in which are housed nearly 900 midshipmen; and there are officers' quarters, halls, armories, gymnasiums; and models, practice ships, steam engines and the like—all taken together constituting a complete naval educational plant which, whether it meet with general admiration or not, is decidedly imposing and has certainly cost the country a mint of money.

At the opening of the school the course of attendance was fixed at five years, of which only the first and last years were spent at Annapolis, the intervening time being passed at sea. After some changes there was a reorganization in 1851, which consisted mainly in leaving out the three years of sea service, and making the course of study four consecutive years; and practice cruises during the summer months supplied the place of the abandoned sea cruises as giving better opportunities for training and practical instruction. This system has continued in operation, with slight modifications, to the present time. And though occasionally the exigencies of the service have interfered with its steady operation—as for instance, during the Civil and Spanish Wars, and during a few recent years, because of the scarcity of officers available for sea duty—yet such interference has always been deplored, and a speedy return to the established custom of four years at the Academy has invariably been recommended, and as soon as practicable followed.

On July 1, 1850, the name of our Alma Mater was changed from the Naval School to the United States Naval Academy; and at about the same time a marking scale of four was adopted—I suppose that the dead-line was also set at 2.5 at this time, and that many a fine fellow then as now crossed it and lost his life. Next a sytem of coefficients was put in force, mathematics counting as 3, the highest of course, and English, French and gunnery as 2 each. A definite scholastic course was pursued; in other words, "The school was no longer adapting itself to its students but requiring its students to adapt themselves to it."

The first graduating exercises held at the Academy were those of the class of 1854. They were simple and unostentatious and consisted of the reading of prayers by the chaplain, a brief address by the superintendent, and the presentation of certificates of graduation.

When the War of Secession broke out, apprehension was felt for the safety of Annapolis; accordingly in April, 1862, the midshipmen were embarked on the frigate *Constitution*, and she sailed for Newport, where on her arrival in May the youngsters were disembarked at Fort Adams, and the school set going again. In September the Academy was moved to the Atlantic Hotel in the city of Newport. Here it had a hard struggle for existence, with politicians, old officers, the Navy Department, pulling in dif-

ferent directions in their endeavors to have the methods and proceedings of the Academy conform to their ideas. Since those days, these same forces have striven at different times to shape or alter the conduct of affairs at Annapolis, but our Alma Mater has pursued the even tenor of her way, for better, for worse, without paying too much attention to the importunities of well-meaning innovators.

To resume, Congress had meanwhile settled the controversy over the permanent site for the Academy, about which there had been much dispute, by decreeing that in 1865 it should be re-established at Fort Severn. So the *Constitution* brought back the midshipmen from Newport to their former home at Annapolis. There our Alma Mater has remained ever since, growing in grace and beauty, in efficiency and importance with each passing year. With this new birth came as part of it that really great naval commander, Admiral David D. Porter. No man ever did more to glorify a college than he did by his efforts to elevate and make powerful the Naval Academy. He converted the institution from a secondary school for wayward boys into a college for responsible young men.

Perhaps the next event of note was the coming in 1874 of Admiral C. R. P. Rodgers as superintendent, another great man. He revived her drooping spirits, improved her relaxing discipline, and revised her scholastic methods. He instituted elective courses in advanced branches, and thereby caused much uneasiness to some of the deep-water sailors of the service. These courses have since been abolished; but that they were "good things," in line with modern educational progress, and might be restored, is the opinion held by some officers.

Of the recent history of our Alma Mater, her great expansion since the Spanish War and her wonderful material growth, little need be told, for the story is known to all. We see her marching onward, striving to the best of her ability to do for her sons what she thinks is right, and insisting that they shall come up to her high standard. Her motive force is coercive; and there is an irresistible "must" making for professional righteousness behind every act of a midshipman's career.

What in her life of over sixty years has our Alma Mater done to entitle her to a page in history? What she has done is what

she is now doing; it is, to quote the language of Colonel Larned about West Point, precisely this:

> She takes us at the critical period of youth; isolates us completely for four years from the atmosphere of commercialism, and provides absorbing employment for both mental and physical activities. She surrounds us with exacting responsibilities, high standards and uncompromising traditions of honor and integrity. She demands a rigid accountability for every moment of our time and every voluntary action. She offers us the inducement of an honorable career and sufficient competence as a reward of success. And she requires of us the surrender of life and personal interest to the service of the state without hesitation and without other rewards than the satisfaction of duty accomplished.

THE CANDIDATE.

> "As wild his thoughts, and gay of wing,
> As Eden's garden bird."
>
> —*Halleck.*

To enter Annapolis, a young man must first be nominated for appointment by his Congressman or by the President. He thus becomes a candidate only; his appointment he does not receive until after he has matriculated.

Last year Congress passed a law to the effect that candidates for admission to the Naval Academy should be informed of their nomination for appointment a year before the time set for appearing before the entrance examination board. This action follows the custom in force for some years at West Point. Its object is to insure the better preparation of young men to pass into the Academy, and to stay in after passing in. Heretofore more than half of the number of candidates who presented themselves for the entrance examinations failed to pass in; and about half of those who passed in—until the pressing need for officers the past year or two necessitated a lowering of the standard—failed to stay in. What will be the effect of the new law in altering these percentages of failures can not be predicted. Perhaps a greater number of young men will succeed in passing the entrance examination, but that these matriculants will be better scholars is left for the future to determine.

In the city of Annapolis there are two schools, whose reason for being is the preparing of boys to pass the entrance examinations for the Naval Academy. They are excellent schools for that purpose, but only for that purpose. In no way whatever do they pay

attention to advanced study, or to discipline—not even compelling attendance at school. The scholars, some 200 or 300 in number, live absolutely free and uncontrolled lives in the hotels and boarding-houses of the city of Annapolis. In no college town, in no home, in no profession or business is such an untrammeled existence possible. Excepting the good that may be born and bred in a boy before he goes to one of these Annapolis preparatory schools, there is no apparent obligation to make him do his duty to the school or to society.

Furthermore in the town of Annapolis, as we all know, there are no diversions of a healthy nature to attract youngsters of 15 to 19 years of age, just from home or boarding school, thrown for the first time in their lives on their own resources, and suddenly relieved of all but innate responsibility. There are no amusements, no athletics, no places to go to. In short there is nothing for the candidates to do to pass away their spare time. They therefore follow their own inclinations in search of fun and recreation, and conduct themselves pretty much as they please. That in such an unusual and unaccustomed situation a boy is likely to seek improper excitement, to gamble a little, to tipple now and then, to annoy quiet people, to tease the police, to get into some sort of mischief, is not to be wondered at, however much it may be deplored. To say that it is not necessary to send boys to these fitting-schools and subject them to the temptations of the town begs the question. For it is not the moral atmosphere surrounding the life of the boys that interests the parents, they can know nothing about it; but the wish to make sure that their sons shall pass the entrance examinations for the Academy. The records show clearly that these schools do their work of coaching their candidates better than other schools, and that nearly all their pupils pass into the Academy. The schools, therefore, deserve the high recommendations grateful parents gladly give them, and these encomiums induce other parents to send on their sons.

These "young barbarians," then, healthy, vigorous, athletic, living their free and easy lives in the quiet old town of Annapolis, unrestrained in their movements except in so far as they must keep an eye on the police to avoid being arrested, must perforce, as said above, seek undesirable amusements and improper diversions, not necessarily wicked or criminal, but more or less demoralizing and unhealthy; or else they must live a life of isola-

tion and quietude apart from their fellows, which is almost as reprehensible. And thus it may happen that when they finally enter the gates and place themselves under the protection of their Alma Mater, they are not, perhaps, quite as "good boys" as they were a twelve-month before.

Moreover, it will be discovered upon investigation, I believe, that so large a number of irresponsible and irrepressible young men in such close proximity to the Academy is not beneficial to the well-being and morale of that institution. One can imagine, for instance, that midshipmen may pay clandestine visits to the candidates, make friends of them and join with them in questionable proceedings. Perhaps a candidate's room may be used as a club-room where orgies may be held and where perturbed spirits may gather to "lay plots, inductions dangerous," to override the regulations, and do "such deeds as would make the day quake to look upon." How serious a menace to the discipline of the Academy this commingling of candidate and midshipman may become was brought out some years ago when the discipline of West Point was inquired into by a Congressional committee. My recollection is that this committee discovered that the young men inside the grounds and those outside were in league one with the other to defeat the ends of military discipline. The committee therefore, to break up this fellowship and its objectionable consequences, suggested the advisability of so arranging for the passing of the entrance examinations as to do away with or render unnecessary the fitting-schools situated in the adjacent village. Accordingly regulations governing the admission of candidates to West Point were adopted as follows:

1. In lieu of the regular mental examination: the examination papers of a candidate who receives his appointment through a written public competitive examination covering a prescribed range of subjects.

2. The certificate of graduation from a public high school or state normal school in which the course of study covers a prescribed range of subjects.

3. A certificate that the candidate is a regular student of an incorporated college or university, without conditions as to the subjects prescribed for entrance to the Military Academy.

I have heard that these rules work satisfactorily and that a marked improvement in the behavior and morale of the cadets has resulted. If, therefore, similar regulations were adopted for admitting candidates into the Naval Academy, similar advantages might naturally be supposed to follow: To wit, only a score or so

of candidates would be domiciled in Annapolis, a number too small to cause worry or to work together for mischief, instead of the 200 or 300 who now roam recklessly about the town doing no good to themselves and perhaps aiding and abetting the midshipmen in subverting the good order and discipline of the Academy.

THE AGE OF ENTRANCE.

"The atrocious crime of being a young man I shall neither attempt to palliate nor deny."—*Pitt.*

The age limits for the entrance of young men to the Academy are now 16 to 20 years. At the opening of the school in 1845 they were 13 to 15 years; but in a few years they were changed to 14 to 18 years, and so remained until 1889. During this long period of time efforts were constantly made to have this age reduced, the older officers advocating the limits 12 to 14, the younger 14 to 16. Many arguments were advanced in favor of the reduction—and they are still put forward—the gist of them being that the limits were too great and too wide. It was held then, as now, that a diversified lot of boys of 14 to 18 years of age, or of 16 to 20 years of age, in the same class, pursuing the same studies, could not be made into a homogeneous body; also that the older the boy the more difficult to imbue him with the traditions of the service, and to inculcate those principles of discipline which should form the foundation of the character of a naval officer. There may be something in the above point of view, for Great Britain, with the very object of having her officers, first, last and all the time, devoted, heart, soul and mind, to the interests of the English Navy, accepts at her Naval Academy boys of only 12 to 13 years of age. On the other hand no other country accepts boys so young as England; Germany, France, Japan and other states follow generally our rule, receiving into their academies young men who are already fairly well educated and old enough to have formed some opinions of men and things.

The conditions, social, intellectual, naval, in England are so different from the conditions found in our order of existence that it would be difficult to institute a fair comparison. As to results, there can be no doubt that British naval officers are good seamen, but that they are the ablest and most capable in the world can not be conceded; and until we know that they are we must assume that the practice followed by the rest of the naval world is a commendable one.

From some scattering unofficial notes I gather that the ages at which midshipmen are received into foreign naval academies are approximately as follows:

England	12 to 13
France	14 to 17
Germany	15 to 19
Japan	15 to 20

Japan deserves special attention here, not so much on account of her recent naval successes as because after several of her naval officers had been educated in the great foreign naval academies of the world, she with this broad and unusual experience as a guide, founded a Naval Academy, to enter which the candidate must be between the ages of 15 and 20 years. Note also that Germany, too, a country in which great care is taken to have efficient institutions, has adopted 15 to 19 years as the age of entrance to her naval school.

In 1889 the entering age at our Naval Academy was changed from 14 to 18 years of age to 15 to 20 years of age; and finally in 1904 the present limits of 16 to 20 years of age were fixed. The advisability of this final change has been set forth by Medical Inspector Ames of the navy who, after a long tour of duty at Annapolis, spoke before the Naval Institute as follows:

> It is known, so far as psychology is concerned, that in the youth of 15 the mind is not developed, and it follows of course, if you are going to take them at 15, unless you can select out of a great many the number required, you are going to fail, because it is apparent that it is preparing, and not advancing the mind, as the intellectual centers are not developed until 17 or 18 years of age. That is now recognized in all institutions of learning, and instead of reducing the age I think it would be far better to keep it as it is, I would say from 17 to 20. Make the standard higher, give them the full four years' course, etc. . . . . I think it would be a great mistake, from the intellectual side, to reduce the age here.

Perhaps this may be the reason why the entering age for West Point is 17 to 22 years. Other reasons for holding to the present age may be advanced. The Academy is in intent and purpose a college and, therefore, to its undergraduates should appertain a manliness, responsibility and sense of honor as great as should be expected to belong to other collegians. Indeed these desiderata should be greater, for to matriculate at the Academy the oath of allegiance must be taken:

> I . . . . do solemnly swear that I will support and defend the Constitution of the United States against all enemies, foreign and domestic;

that I will bear true faith and allegiance to the same; that I take this obligation freely, without any mental reservation or purpose of evasion; and that I will well and faithfully discharge the duties of the office on which I am about to enter. So help me God.

It requires a full-grown man to comprehend fully the significance of this oath; and the nearer the boy is to the man by just so much the better will he know to what he pledges his life, his fortune and his sacred honor.

Again, in old times a youngster upon graduating was put on the forecastle where an officer of the deck could keep an eye on him, and where an old boatswain, a boatswain's mate, a captain of the forecastle and a fore-mast man, all seamen of years and experience, taught him how to behave like a man towards men and how to do things in "Bristol fashion." To-day, however, there is no overseeing officer of the deck and no old-fashioned forecastle school of practical instruction. Instead of being subjected to these humanizing influences of the olden time, midshipmen are now removed from the direct supervision of superiors and the valuable companionship of old "shell backs," and must rely to a great extent on their own intelligence and discretion to perform properly the duty entrusted to them. Wet nursing, as the term was understood in the old navy, is a thing of the past.

Perhaps herein may lie one cause for the complaint of some superior officers that the midshipman of to-day is not the equal professionally of the midshipman of yesterday. It is true that life on board the modern man-of-war is very different from what it was on board the ships of ten or fifteen years ago; conditions, surroundings, duties, have changed. But the youngsters have not; that is, the midshipman of 19 years of age can no more be expected to know how to handle men and do well the duty of a seaman now than formerly when wet nursing was regarded by him as an abhorred necessity. To detail an inexperienced boy of 18 or 19 to take charge of a gang of men and expect him to carry out orders to the satisfaction of all concerned, is expecting a great deal, perhaps too much. Maybe a young man of 22 can do no better, but it must be admitted, I think, that the chances are in favor of the older boy; he surely will have had more experience, and will know more of men and the ways of the world.

The limits of four years between 16 and 20, to which some objection has been made, are not so wide as are the limits between

the ages of entrants to West Point, 17 to 22, or to our colleges, where no complaint is made of the lack of homogeneity; for the endeavor is to have boys of the same mental caliber and educational training assembled together in the same classes to pursue the same studies. As a matter of fact, however, few boys of 16 enter Annapolis and few of 20; the majority average about 18 years of age. And on the common ground on which, especially in such a college as Annapolis, they all must meet, the differences in birthdays are never apparent. Nor for that matter are they afterwards, until, as officers, they approach the sere and yellow age of 62. There is, though, much difference in the opportunities boys may have had to receive competent instruction, before they enter Annapolis, and this ought to be taken into account in fixing age limits. There are sections of our country where boys until they reach the age of 20 can not be as well educated as boys of 16 in other parts of the country. To restrict the limits of age to one or two years would cut out these oldsters and perhaps permanently exclude representation from some Congressional districts. Another reason why older boys like those now entering Annapolis are preferable to younger boys is, that the older the boy the more cultured he will be, a point not to be sneered at, since not much extraneous matter is taught at the Academy.

ENTRANCE REQUIREMENTS.

"Multiplication is vexation,
Division is as bad;
The rule of three perplexes me,
And practice drives me mad."

—*Nursery rhyme.*

In the chapter on the candidate the suggestion was offered that if the Naval Academy were to adopt the method pursued by West Point for ascertaining the mental qualifications for the admission of candidates, the morale of the young men would at least suffer no deterioration; for many of them would abide during the time of preparation elsewhere than in the city of Annapolis. We are now to consider what the mental requirements may be which a young man must meet in order to pass this entrance examination for the Naval Academy.

When Mr. Bancroft opened the Academy in 1845 the scholastic qualifications for entrance were such as were possessed by most

boys of 15 instructed at village schools—ability to read and write, and some knowledge of geography and arithmetic. When the age was placed at 14 to 18 years, the scope of the examination was not materially changed; more thoroughness, however, was exacted in the answers to the questions, and a greater degree of familiarity with each subject was expected. These questions were, in general character, much the same then as now, so far as they extended, and may be stated as follows:

Arithmetic.—It is essential that the candidate be thoroughly proficient in all branches of arithmetic.

Geography.—The location, etc., of places, rivers, mountains, etc., and the course of a vessel in making a voyage between ports.

Grammar.—The whole of English grammar as treated in common-school text-books. Reading, writing, and spelling.

In 1882 algebra was included, "elemental in character and limited to questions and problems upon fundamental rules and simple equations of one or more unknown quantities"; also this year for the first time appeared questions in United States history. The age of entrance, however—14 to 18—held until 1889, when it was set at 15 to 20 years. But no additions were made to the entrance requirements until 1902, when their scope was extended so as to include, in algebra, surds and quadratic equations; plane geometry; and, in history, an examination in world history. In other subjects the examination remained unchanged.

In 1904 the age of entrance was fixed at 16 to 20 years, without altering the mental qualifications of 1902. These entrance requirements of to-day may be resolved into two divisions; to the first belong English, history, geography: to the second, mathematics. A candidate is required to complete and hand in his answers to the first in six hours; to the second, in seven hours—three hours for arithmetic, two for algebra and two for geometry. In looking over a specimen examination paper, the questions will appear simple enough; and most boys of 14 to 16 should be able to answer them satisfactorily. Yet the truth is that to-day, as for the past 40 years, about half the number of boys who essay the examinations fail to pass them; which would seem to indicate either that the examination questions are too difficult for young men of 16 to 20 years of age to answer, that is, that the standards are too high; or that the high schools of the country, public and private, are at fault in the way they teach and instruct.

But, writes Park Benjamin:

> The standards of admission are lower than at any other technical school in the country. It is because they are too low that the percentage of rejected candidates is so great and the proportion of graduates so small. This is paradoxical but true. If such a low standard as now prevails is to represent the maximum attainment of the candidate, then he is not sufficiently trained nor does he possess the *prima facie* intellectual capacity to deal with the subjects which must be mastered in the four years' course. If the general education of the candidate has gone beyond the standard, experience shows that he will be apt to slight the difficulties of the examination, leave preparation for the last moment and then cram. In any event the character of the preparation will always be governed by the standard. If the latter be low the preparation will extend no higher; if on a higher level the preparation will come up to it. Experience at the Academy and in all schools demonstrates that the percentage of rejection does not increase as the standard is raised, but on the contrary, decreases.

And James R. Soley, in his work on "Foreign Systems of Naval Education," 1880, writes:

> The high standard of admission and the competitive examinations [for entrance to the French Naval School] are not productive of cramming; on the contrary they are far less so than a lower standard would be, even in a test examination where the preparation is given in inferior schools with a month or a fortnight of private tuition just before the examination. At the examination for entrance to Annapolis, limited as it is in scope and trifling as are the subjects that compose it, a large number of the weaker candidates are prepared by this latter process.

Mr. Soley seemingly arraigns the fitting-schools of thirty years ago as inferior. These schools, however, were then as they are now to a great extent dependents of the colleges; and although complaint is heard to-day of the lack of thoroughness in their methods of instruction, still they do the best they can under existing circumstances; and most of their pupils succeed in entering college and in staying there.

A young man about 18 years of age who has been attending a fitting- or high school, has left arithmetic, geography and other "trifling" subjects three or four years behind him; consequently he will find them unusually distasteful and difficult when he attempts a second time to master them. And especially so when he learns that the questions to be put to him by the Naval Academy examiners differ somewhat from those he formerly was asked when he was a young boy at school. Maybe he should know how to answer them, but that is not the point; for to be prepared to enter college, to which nearly all secondary instruction tends, he

does not have to answer them, except in so far as his early knowledge may be needed to elucidate his answers to the questions put by the college examiners. The point is that Annapolis should recognize that almost every young man of 16 to 20 years of age is studying with the idea of entering college; and that, therefore, it can not be for the educational good of such a boy to require him to knock off his French, English, mathematics, etc., which he has been studying, and hark back to his grammar, arithmetic and other "trifling" subjects—if for no other reason than because if he fails to pass in at Annapolis, he must go back to his school at least a year behind his former classmates.

I do not think it can be proved that a collegian is not so well prepared to master the curriculum of the Academy as a candidate prepared at one of the special Annapolis preparatory schools; for the experience of West Point as well as of Annapalis does not, so far as my information goes, justify such an assumption. The bare fact that a young man has answered the college entrance examination questions is fairly conclusive that he possesses sufficient intellectual capacity to deal with the subjects he must master during the time he is at the Academy. Then why not accept a college entrance certificate without further questioning, as satisfactory evidence of ability to meet academic demands?

In a preceding chapter, the regulations governing the admission of candidates to West Point were given, and it was suggested that they were suitable for adoption for admission to Annapolis. To these one more alternative might be added: that candidates who pass the examination set by the College Entrance Examination Board shall be admitted to the Naval Academy.

The College Entrance Examination Board is composed of representatives of colleges and of representatives of secondary schools. Any college which has an entering class of not less than 50 students may be admitted to membership, and the members from the secondary schools are selected by the different associations to which they belong, in the proportion of one secondary school representative for every three colleges. The list of subjects for examination includes English, history, Latin, Greek, French, German, Spanish, mathematics, physics, botany, geography and drawing. And from among these many subjects the candidate must select those that are required by the institution which he purposes entering.

The definitions of these subjects are those agreed upon by the Committee of the National Educational Association on college entrance requirements, in consultation with leading organizations of American scholars, and are as follows:

The requirement in English is that recommended by the Conference on Uniform Requirements in English. In substance it is as follows: (a) Reading. To test the candidate's power of clear and accurate expression, he will be called on to write a paragraph or two on each of several topics chosen from certain books prescribed for this part of the examination. (b) Study and practice. This part of the examination presupposes the thorough study of each of several classical works.

The requirement in history is based on the recommendations of the committee of the American Historical Association. It is divided into (a) ancient history; (b) mediæval and modern European history; (c) English history; (d) American history and civil government.

The requirements in French follow the recommendations of the committee of the Modern Language Association. They comprise a knowledge of French grammar, the reading of about 300 pages of easy modern prose, writing from dictation, etc.

In mathematics, the requirements are in accordance with the recommendations made by a committee of the American Mathematical Society, and are as follows: Elementary algebra; (1) algebra to quadratics; (2) quadratics and beyond. Plane geometry.

In geography, the requirement is based on the report of the Committee of Physical Geography of the Science Department of the National Educational Association. The questions have to do with the earth as a globe, the ocean, the atmosphere, and the land.

To ascertain how these questions have been answered by the candidates, the board assigns the papers for inspection and rating to selected readers who mark them on a scale of 100; and no paper can be finally marked below 60 (2.4) until it has been passed upon by two readers. It would be interesting to know how these papers, especially the mathematical ones, would fare at the hands of the Naval Academy readers.

To enter college, a candidate must offer at his examination subjects amounting to the equivalent of 15 points. A point represents the number of years at the rate of five periods a week which will normally be required in the secondary school to prepare adequately for the college examination. Here and there a college requires 16 or 20 points to be made, but this is merely a difference in dividing up the same subjects; no more preparation

is necessary. In valuation the subjects for college entrance run ordinarily somewhat as follows:

English counts as	3	points.
Mathematics counts as	3	"
History counts as	2	"
Modern language counts as	2	"
Science counts as	2	"
Latin counts as	3	"

If Latin be counted as 2, as it is to enter some schools of science, a second modern language must be offered. Or if no Latin be required more science must be substituted. However, very few scientific schools admit students who have done less than two years of Latin; and whether we of the navy consider Latin useful or not, most educators have concluded that it is. Nowhere is there a tendency to drop it. On the contrary, it is more firmly fixed to-day as a required study for matriculation in schools of science than ever before. Am I advocating Latin as a requisite for matriculation at Annapolis? No. I am advocating only what admits to Johns Hopkins, Massachusetts Institute of Technology, Yale, Chicago, California, etc. If a man can pass into scientific schools like these, I believe he is fit to enter Annapolis without further examinations, and take up his work there.

To close this chapter I may remark in connection with my advocacy of college examinations for entrance to Annapolis, that to enter the principal foreign naval schools, Latin and a modern language must be offered.

PHYSICAL REQUIREMENTS.

"With an auspicious and a dropping eye."

—*Hamlet.*

After passing his mental examination, the candidate must pass his physical examination. In offering some remarks on this purely technical matter of physical requirements about which I can not know much, I am aware that I am perhaps rushing in where angels fear to tread, none the less I have something to submit for your consideration.

The candidate for admission must be examined physically at the Naval Academy by a board composed of three medical officers of the navy; and any one of a number of conditions will be sufficient to cause his rejection. To the clause "visual acuteness must be normal in both eyes" I invite attention.

Visual acuteness is measured by fractions of twentieths; 20/20 is perfect or normal, 18/20, 15/20 and so on is defective, the smaller the numerator of the fraction the greater the defect in the acuteness of vision of that eye which is being tested by the distance at which it can read letters, figures and signs marked on a standard card in use by all oculists. I know an instance where a candidate had one normal eye, and one eye defective to the extent of 16/20; the candidate was rejected. What was said at a subsequent examination of this boy's eyes by celebrated specialists led to the belief that few people in the country have perfectly normal vision in both eyes, though the defects often are not of such a nature as to necessitate the wearing of glasses.

That a certain amount of near-sightedness is common to the majority of men in the United States, is recognized by the government authorities in the rules and regulations laid down for the physical requirements of candidates who may be desirous of entering many branches of the government military service. For instance, I find that to enlist in the navy, one eye normal and one eye with a minimum vision of 15/20 will be accepted. This is also the requirement as to eyesight for candidates for the medical corps of the navy. To enter West Point as a cadet 15/20 in one eye and the other normal are accepted. Indeed, so far as can be ascertained, only to candidates for entrance to the Naval Academy is the rule applicable that normal vision must obtain with both eyes.

The wearing of glasses by candidates for matriculation at Annapolis is properly inhibited, but boys whose eye sight is of 15/20, as well as sailors, soldiers and others, do not wear or have to wear glasses to see well; and the defect—if such it be—is no more likely to lead to genuine near-sightedness than is seeing with both eyes normal likely to lead to the wearing of glasses. If, however, the boy with the two normal eyes, or the boy with the one normal eye and the one 15/20 eye, should have to resort to wearing glasses from whatever cause after he enters Annapolis, I submit that he should not be dismissed for that sole physical defect; for I fail to notice in the world at large that wearing spectacles hinders a man in the pursuit of happiness. Excepting football players, I know of no other players or persons who can not do well enough with glasses on. At tennis, baseball, rowing, etc., even in swimming, men wear glasses. The drivers of automobiles wear them, the

gun pointers in ships look through telescopic sights, the officers on watch rely on binoculars. When spray is flying, snow blowing, fog drifting, your man with normal vision has to rub his eyes to see quite as often as your spectacled man has to wipe his glasses. Have you never seen a man with normal vision put on colored glasses to see through glare and to keep smoke out of his eyes? And pilots in bad weather look through panes of glass.

A man with normal vision possesses this advantage over the man who wears glasses, he is better-looking. Apart from the question of personal appearance, I have not observed that the many spectacled gentlemen seen on the quarter-decks of our warships perform duty a whit less efficiently than those of us who are so fortunate even in old age as to preserve "an eye like Mars to threaten and command."

The physical examination of a candidate takes place after he has passed successfully his mental examination. Perhaps it would be better were the order reversed, but be that as it may, so long as present conditions hold, the suggestion is offered that, since by far the greater number of candidates live in the town of Annapolis some months before the examinations are held, they be directed, a month or so before reporting to the superintendent for mental examination, to appear before a naval medical examining board for a preliminary physical examination. By resorting to this plan many boys would be eliminated who would go home quietly instead of importuning the Department, as they now do, to have physical defects waived; for it well-nigh breaks the heart of a boy who has passed mentally, to be thrown out for some physical defect which neither he nor his family doctor believed existed.

Let the surgeons examine for eyesight, for hearing, for heart trouble and for other defects readily detected, and make a temporary record; then after the youngster has passed mentally much time will be saved towards completing the final official record. As the physical examination is conducted at the present time, about 200 candidates are examined in June at the rate of about ten a day, and therefore before the last man is passed upon nearly a month will have elapsed, during which time the young man must stand by at his own expense, perhaps finally to be rejected. Another plan would be to require the candidate, when he sends his letter of acceptance of his nomination to the Department, to send with it a doctor's certificate containing certain specified phys-

ical data called for by the Bureau of Medicine and Surgery. This would be the plan to adopt were the mental entrance requirements changed as hereinbefore indicated.

Having passed mentally and physically, deposited the money for his outfit, and taken the oath of allegiance, our candidate becomes at once a midshipman, and straightway our Alma Mater begins to bring him up in the way he should go.

THE CURRICULUM.

"First Player: We have reformed that indifferently with us, sir.
Hamlet: O, reform it altogether."

—*Hamlet.*

The three general ideas with which Herbert Spencer set out in discussing a curriculum are thus stated: Life is divided into several kinds of activity, of successively decreasing importance; the worth of each order of facts as regulating these several kinds of activity, intrinsically, quasi-intrinsically and conventionally; and their relative influences both as knowledge and discipline.

I imagine that Herbert Spencer means that in discussing a curriculum we must have a general idea of what is to be the profession of the man, what methods we intend to employ to fit him for this profession, and what kind of a man his education and profession will make of him. Every man's profession, education and character are dependent for their success, development and maturity upon a curriculum and discipline begun in childhood and reaching through boyhood far into manhood; but in the most distinctly formative period of this time, in the life of a naval officer, is the four years devoted to professional study at the Naval Academy when the young man begins seriously to consider his vocation and to note the requirements of duty. During these years he determines that his life shall be that of a naval officer; during these years he is measurably fitted for the naval profession, and during these years his character is presumably so affected that he must forever after be an officer and a gentleman.

Many influences are brought to bear on a young man while he is at the Academy in the endeavor to prepare him to meet the demands of a naval career, but that one to which perhaps greater import is attached than to any other is the influence exerted by a close application to a rigid and severe curriculum. For it may be said that with rare exceptions the young man who leads his

class in theoretical work, no matter how " wooden " he may be in other respects, will surely pass into the service, whereas the most brilliant youngster in all other respects will, if deficient in this theoretical work, surely be dropped.

The course of studies to be pursued is determined by the Academic Board composed of the following eleven members: the superintendent, who is the president of the board, the commandant, who is head of the Department of Discipline, and the heads of the respective Departments of Seamanship, of Ordnance, of Navigation, of Naval Engineering and Naval Construction, of Mathematics and Mechanics, of Physics, of Electrical Engineering, of English, and of Languages. This board apportions among the different instructional departments the number of hours each department shall have for elucidating in class room the subjects of study decided upon; and also assigns to each one of these subjects a coefficient of value which varies according to the esteem in which the subject is held. Thus both the allotment of time and assignment of the coefficient are significant of the importance attached by the Academic Board to the component parts of the curriculum. The table following illustrates this:

ASSIGNMENT OF TIME.

Table showing number of recitation periods assigned to classes for each department and the percentage of total time allotted, 1907-1908.

Department.	4th class.		3rd class.		2nd class.		1st class.		Total periods.	Per cent of total time allotted to each department.	Sum of coefficients for four years.	Value for four years.
	1st term.	2nd term.	1st term	2nd term.	1st term.	2nd term.	1st term.	2nd term.				
Seamanship					2	2	2	2	8	6.25	14	8
Ordnance					2	2	3	3	10	7.81	18	12
Navigation						2	5	4	11	8.59	20	9
Naval engineering and naval construction	4	3	3	2	4	4	4	5	29	22.66	30	18
Mathematics and mechanics	6	6	6	5	4	3			30	23.44	29	15
Physics			2	4	2				8	6.25	10	6
Electrical engineering					2	3	2	2	9	7.03	17	6
English	3	4	2						9	7.03	7	3
Languages	3	3	3	5					14	10 94	15	6
Total	16	16	16	16	16	16	16	16	128	100 00		

The first two years of the course of study are devoted largely to the study of pure mathematics. Beginning with elementary algebra the student is hurried through higher algebra, the geometries, the trigonometries, and concludes with the calculus. The pace set is tremendous, and is perhaps too rapid to be followed

with thoroughness and comprehension by any but the few natural mathematicians in the class. And in addition to this instruction of 23 periods in pure mathematics there are 12 periods of recitation in naval engineering.

During the second or remaining half of the time before graduation, the predominance of the mathematical side of instruction will become quite as striking if we take cognizance of subjects taught under some other name than mathematics. For instance there are mechanics; steam engineering, involving mechanical processes, principles of mechanism, marine engines, and naval architecture; ordnance, including ballistics and elastic strength; electrical engineering; astronomy; and navigation. Indeed the more carefully the figures in the table of the assignment of time are sifted, the more conspicuous becomes the broad purpose of the curriculum. Excepting the few periods accorded to English, modern languages and seamanship, about 75 per cent of the whole time of instruction is devoted to mathematical subjects and to scientific and professional subjects elucidated along mathematical lines. And to further accentuate the importance to be attached to this mathematical development, the Academic Board has assigned the highest coefficients to the subjects of naval engineering, mathematics, and navigation; and the lowest to English, physics and seamanship.

Is it essential to the making of an efficient naval officer that so much of his time, while he is learning the rudiments of his profession, shall be devoted to acquiring only the mathematical point of view?

There will be no difference of opinion, I imagine, with respect to the general mental qualifications which midshipmen must possess in order to master the course of study at Annapolis. For whether this course remain as intensely mathematical as it now is, or be revised and broadened so as to include other methods of reasoning and other subjects, the prime requisite is that the boy's mind shall be analytical rather than synthetical, and so trained as to incline towards ascertaining first principles. But the inference ought not to be drawn from this that mathematical astuteness alone will equip a naval officer so perfectly that he shall be ready to solve the various problems he must attack while practicing his profession, a profession embracing many ramifications and diverse duties, some of which can be envisaged only when looked at from some other than the mathematical point of view.

That too much attention has been paid to the importance of some subjects at the price of the neglect of others is a statement warranted by the testimony of many naval officers. Time and again has the subordinating of nearly all the teaching at Annapolis to mathematical methods and training been complained of, and occasionally suggestions have been offered and efforts made to bring about some modification, so far, however, with indifferent success. This failure may be ascribed to two causes. First, to the apathy of the alumni. Really the lack of genuine interest we graduates evince about matters affecting the welfare of our Academy is pitiable. Surely we must be aware that these matters merit our serious consideration; that they can be and ought to be improved; and doubtless we are perfectly sincere in our desire to have our Alma Mater follow lines of progress like other colleges; nevertheless we never do anything to forward this advancement. How many of us rally round the two or three reformers who now and then point out that our Academic course is not entirely suited to the demands of the service?

The second cause of the failure to amend the curriculum may be ascribed, I venture to think, to the Academic Board, a majority of whose members believe in the efficacy of mathematical methods. Very clever men they unquestionably are; very capable, very earnest, very diligent, but from the nature of their minds and training so circumscribed, I submit most respectfully, as to fail to perceive that too close application to the study of positive sciences like mathematics is apt to make a man somewhat dogmatic and one-sided. "The peculiarity of the evidence of mathematical methods," writes John Stuart Mill, "is that all the argument is on one side. There are no objections and no answers to objections. But on every subject on which difference of opinion is possible, the truth depends on a balance to be struck between two sets of conflicting reasons."

Some persons may answer this criticism by saying that no difference of opinion is possible, for, excepting in a few minor and unimportant details, the course at Annapolis is in essence all that it should or could be under existing circumstances. This is the opinion of the Wainwright Board. At present, however, my intention is not to endeavor to create the impression that mathematical methods should be relegated to a secondary place in the scheme of education; for it is admitted that a knowledge of mathematical subjects is as useful and necessary as a knowledge of

seamanship or English, or some other subject, like logic or history, which is or might be taught at Annapolis. But my wish now is to ask you to consider whether mathematics alone, more than seamanship alone, taking each subject in its most comprehensive significance, will insure to him who knows it a brillant naval career? In the first editions of Luce's "Seamanship" was the statement, in effect, that the dynamical study did not teach a man how to tack ship. When this was quoted to an instructor of mechanics he replied, "Very true! But we who know the dynamical study know also how to tack ship." Neither statement will stand the test of analysis. To know how to handle a ship is certainly but a part of our profession, so too is a knowledge of mathematics; and it cannot be taken for granted that the latter knowledge by itself is of the essence of the former.

Admiral Brownson, in his report made to the Navy Department, after serving three years as superintendent, spoke plainly about this surcharge of mathematical instruction, and about the difficulty he met in his attempt at having it lessened, in the words following:

> Further consideration has strengthened my opinion of the advisability of having the course of study examined and revised, if necessary by a board of officers not connected with the Academy.
>
> While the study of mathematics is the best known method of testing and comparing the natural ability of midshipmen, it is a question as to whether it is necessary or not to continue that study to too great an extent, either in abstract or applied mathematics, when the requisite ability in this line is once demonstrated.
>
> I am decidedly of opinion that this overhauling of the course can only be properly done by sea officers not connected with the Academy. Soon after assuming command at the Academy I ordered a board of competent officers to make a thorough investigation of the curriculum at the Academy, and to recommend such changes as might, in their opinion, be advisable in order to best prepare the graduate midshipmen for sea officers. The investigation by the board resulted in recommendations for minor changes only, which convinces me that an outside board could best deal with the subject.

Since this was written, Admiral Brownson's recommendation has been carried out and a Board of Sea Officers, the Wainwright Board before referred to, has reported. This report begins as follows:

> As a result of its investigation, the board is of the opinion that, as a whole, the present course at Annapolis is well adapted to its purpose. It is the slow evolution of many years, and has, generally speaking, kept pace with the rapid development of naval science, a fact that is well attested by the graduates of the Academy.

Further on, under the heading Mathematics, the board says:

> The course of study pursued in the Department of Mathematics has received the careful attention of the board, and the conclusion has been reached that it is well devised for the needs of the Academy; that there is need for the study of the higher branches taught, and that too much time is not allotted to this department.

And once again, in closing its report, reference is made to this subject:

> In reviewing the entire course of studies, the board does not find that too much time is spent on mathematics, or that the subjects are too abstruse, but believes that, with new text-books and a revision of the course, it can be made less difficult and the instruction more thorough.

These findings appear rather startling in view of the implications to be found in Admiral Brownson's report.

Some of the other recommendations of the board, equally unexpected, may be mentioned, though they were not acted upon. For example, the board advised the transfer of the Department of Navigation to the Department of Seamanship and the addition of law to this new department. Also that the Department of English and Modern Languages be combined, that the course in English be cut down and that in French and Spanish expanded; and that a seagoing officer be placed at the head of this polyglot department.

Into a discussion of these and other recommendations not here mentioned, I shall not now enter. A very few of them have been accepted by the faculty, others are not likely to be. However, the fact is patent that the board holds fast to the mathematical features of the curriculum and relegates to almost total oblivion studies of a cultural nature. No criticism is here made of this; instead, I beg to submit an excerpt from the report, made at about the same time as the above, by the Board of Visitors to our kindred institution, West Point.

The visitors to West Point, who made a report suggesting far-reaching reforms in its curriculum and methods of instruction, say:

> An educated man is not merely trained to proficiency in a profession, but has had his susceptibilities so drawn out and developed that he enters upon life capable of appreciating the best it has to offer in the way of learning, art, literature and science, both historically and in their relation to the life of to-day, having also some knowledge of himself and of his place in the universe about him, and inspired with a desire for mental growth which will stimulate and dominate him, no matter what his occupation or how long he may live.

THE CURRICULUM. STEAM.

"Annapolis: A fair show wanted."
—*Lieutenant Cluverius.*

In the last chapter I quoted from the report of an admiral who entered the navy in 1861, and who has therefore served for 47 years. I shall open this chapter with a quotation from a lieutenant who entered the service in 1892, and who has therefore served for 16 years. The substantial agreement between these two officers as to the competency of the graduated midshipmen to meet the requirements of active sea duty is noteworthy.

Lieutenant Cluverius, in the June, 1906, PROCEEDINGS OF THE NAVAL INSTITUTE, writes:

> It is being said in our ships that midshipmen do not know as much as they used to; that they are unable to put theory into practice; that professionally they do not acquit themselves with that thoroughness which has so generally characterized an officer of the navy. This, aside from engineering duties against which these charges are not directed, is in great part true.

The indictment of inefficiency contained in the above statement must stand unchallenged if we accept as a true bill the reiterated testimony of commanding and other officers that the passed midshipman of to-day knows not how to lower a boat, drill a gun's crew, or do a day's work. Thus the three great professional subjects of seamanship, gunnery and navigation are brought to the bar.

I do not think that the reason for the lack of thoroughness in the performance of duty by the graduates of the Academy of to-day is to be found in their inability to put theory into practice, except in so far as there has been, in preparing them for their active duties, an insufficient amount of theory; for the other great professional subject, steam, is so well taught that against it no charges are laid. Why are midshipmen good engineers, and poor seamen, gunners and navigators? The answer may be found partly in a consideration of the figures given in the table of the assignment of time. Steam engineering, including the two hours[1] of instruction in naval construction, is taught for 29 hours; seamanship is taught for 8 hours. Again, as against the 29 hours of steam instruction may be set the 10 hours of gunnery; and again,

[1] An hour means one hour or period of class-room instruction a week for one term.

as against these 29 hours of steam there are only 11 hours of navigation. It thus appears that whereas there are 29 hours of theoretical instruction in steam there are only 29 hours of theoretical instruction in the combined subjects of seamanship, gunnery and navigation. This is the present theoretical situation. What was the situation about 20 years, even 10 years, ago, in those good old times, when midshipmen used to know more? In 1886 there were 9 hours assigned to seamanship, including naval construction, 8 hours to gunnery, and 10 hours to navigation; in steam there were 14 hours, including 6 hours of mechanical drawing. In 1896, there was no change; the curriculum still called for 27 hours of theoretical preparation in what were then known as line officer's duties, and for 14 hours in steam.

The proportion theoretical seamanship at the Academy to-day bears to theoretical steam to-day, omitting the 2 hours assigned to naval construction, is as 8 to 27. In 1886, omitting 2 hours for naval construction from the seamanship totals, the proportion was as 7 to 14 or 1 to 2. That is, in the past twice as much steam was taught as seamanship, and to-day 3½ times as much. For gunnery then and now, the proportion will be found to be about as 8 to 14 in 1886, and as 10 to 27 in 1907; and for navigation and for steam, respectively, as 10 to 14, and as 11 to 27.

There have been many revolutions in material in the navy since 1886; the battleship, the long gun, the improved compass have come; high speed, fast shooting, swift navigating have been extraordinarily developed; steam has supplanted sail; the mechanical mount, the man-handled guns; the degree of the compass, the point on the card. But these momentous transitions and what they imply cannot be interpreted, if value be given to the testimony of experienced officers, as signifying the diminished importance of the need of the kind of knowledge the naval officer formerly acquired while he was a student at Annapolis; he must still be a seaman, a gunner and a navigator, as well as an engineer.

The amalgamation law of 1899, which fused into one presumably homogeneous whole the old line and engineer corps, contained the requirement that all undergraduates at the Academy should be taught steam engineering. The literalness with which this proviso has been accepted may partly account for the ascendency, among the purely professional studies, of steam. "Previously," writes Lieutenant Cluverius, "the line cadet actually

learned enough engineering to ornament his education. Now how changed! In the drafting-rooms, midshipmen begin drawing machine parts as soon as they can hold their instruments," etc.

In those days of ornamental steam midshipmen could and did perform engineering duties and became sufficiently adept to justify the placing of them to-day in charge of the machinery of modern ships. And besides they were, according to the testimony, A B seamen, good gunners and efficient navigators; professionally they acquitted themselves with that thoroughness which ought to characterize a naval officer. To-day, though, it is said, they do not so acquit themselves. Maybe they bear themselves less well to-day because they have been subjected to too great an extent to the influence exerted by the steam engineering department. No department at Annapolis has been so fully developed in recent years as that of naval engineering; in machinery exhibit, equipment and plant it easily stands first; it has the largest corps of instructors, men earnest, energetic, insistent; it is thoroughly well organized and composed; and it enjoys a prestige and control second to none. It was the only department pronounced unqualifiedly excellent by the Wainwright Board. Is it advisable, however, to permit this one professional department to become so prominent, especially when further consideration is given to the fact that only a few midshipmen after graduation will devote their abilities to perfecting themselves as skilled marine engineers?

The graduate of the present day, when he goes out into active service afloat, is reputed to be a good engineer officer and an inferior line officer. The old-time graduate was accounted a good all-round man. Is the gain of to-day worth the loss of yesterday? Even the gain is not complete, for it has been found necessary, in order to secure expert marine engineers, to select those young men who display special aptitude in steam and give them a post-graduate course. We are thus led to think that perhaps our last state is worse than our first; for while no fault is found with our performance of engineering duties at sea, still we are not considered to be fully competent to perform these duties on shore. But the performance of these engineering duties afloat has resulted in our neglect or inability to perform as well other equally important and necessary duties. The embarrassment attending the situation may perhaps be attributed to a reluctance on the part of some instructors at Annapolis to admit that a man can be a

thoroughly efficient engineer officer on board ship and at the same time know but little of the theory and design of the machine he may be so capably managing. In the merchant marine service engineer officers are not designers of marine engines.

That the naval officer must know something of steam engineering goes without further saying. But he must also know something of many other branches of his profession. Formerly he did know something of steam as well as of these other branches; now, apparently, he is only proficient in steam. Why not then, to placate those officers who exclaim against the lack of professional cleverness of our present-day midshipmen, rearrange the course of studies at Annapolis so as to make it conform in principle to the custom of the past, when such young men as completed the curriculum were found to possess sufficient attainments in all departments of their profession to entitle them to receive the approval of their senior officers?

The suggestion contained in the above that it might not be a bad idea to cut down the number of hours now alloted to theoretical instruction in steam, will, I make no doubt, be received with scant seriousness. Instead may be offered the plan of a five-year course. Lieutenant Cluverius advocates this, largely so, it strikes me, with the idea of devoting most of the added time to the study of steam. A five-year course might, perhaps, be better than a four-year course, provided the steam instruction be not amplified and that no more mathematics be supplemented. To go further afield in mathematical inquiry, whether in steam, or ballistics, or mechanics, or mathematics, etc., will not in the light of present experience advance the efficiency of a midshipman; for already he is too much of a machine, too hide-bound, too cramped. What he needs to start with is confidence, common sense and a broader outlook. An effort therefore should be made to make him more like other men of his years; and towards accomplishing this, some of the extra time of the five-year course might be given up to instruction in such sciences as logic, political economy, history, morals, etc.

However, to pursue this line of inquiry and base it on a five-year course at the Academy is to little purpose, there being no probability of such an extension of time. Hence if a fair show is wanted for Annapolis—if the present state of affairs there needs to be modified—that way would seem to be the best which seeks

an adjustment between the existing situation and the existing condition. The situation is, as aforesaid, that the midshipmen at graduation are not sufficiently prepared in all directions to meet the responsibilities necessarily at once thrust upon them; and the condition which measurably affects the situation, is, briefly, that only 4 years can be given to this preparation. There being in these 4 years 16 hours of class-room instruction per week, there will be 128 periods[2] to be disposed of. These 128 periods might be distributed among the different departments somewhat as follows, and in order that the suggested assignment may not appear too radical and startling, I have placed alongside my total the total for the year 1895, 13 years ago, when there were fewer disturbing elements in the academic atmosphere. Also the total for 1907-1908.

ASSIGNMENT OF TIME.

Department.	4th class.		3rd class.		2nd class.		1st class.		Total suggested.	Total 1895.	Total 1907.
	1st term.	2nd term.	1st term.	2nd term.	1st term.	2nd term.	1st term.	2nd term.			
Seamanship	.....	.....	.....	.....	.....	2	3	4	9	9	8
Ordnance	.....	.....	.....	.....	.....	2	3	4	9	8	10
Navigation	.....	.....	.....	.....	.....	2	4	4	10	10	11
Steam	.....	.....	2	2	3	3	4	4	18	14	29
Mechanics	.....	.....	.....	.....	4	3	.....	.....	7	8	7
Physics	2	2	2	2	3	3	2	.....	16	16	17
Mathematics	5	5	5	5	.....	.....	.....	.....	20	26	23
English	5	5	4	4	3	1	.....	.....	22	20	9
Modern Languages	4	4	3	3	3	.....	.....	.....	17	17	14
Total	16	16	16	16	16	16	16	16	128	127	128

We observe from the table that the first year is given over entirely to general subjects. These I think ought to be similar to freshman courses in colleges; therefore physics and not mechanical drawing, so that those unfortunates who bilge may not find themselves thrown on the educational world with a year lost out of their lives. The second year the same curriculum is pursued; and mechanical drawing is introduced, for now the student has a fair chance of staying in the Academy; and, having made a cruise and acquired some practical knowledge of the working of the routine and discipline, he is better able to grasp the significance of what he is learning. In the second half of his third year the mid-

[2] A "period" means one hour's class-room instruction per week for one term, or 16 hours in all.

shipman begins his purely professional studies in order to be somewhat prepared for his duties as a first-classman on his last practice cruise. The last year is assigned wholly to professional studies, so that he will start out to sea, his cup of knowledge full to the brim.

The fundamental principles governing the above arrangement of time, are not at variance with those promulgated some years ago—to restrict the first part of a midshipman's education to general studies and the latter part to professional studies. Only in developing these principles does my suggested assignment present differences, steam and mathematics are pushed back, and more time is assigned to the Department of English, notably more than during last year, when the aim seems to have been to emphasize more unduly than ever before the importance of the mathematical and mechanical studies at the expense of the great truths to be found in English studies.

THE CURRICULUM. CULTURE.

"Studies serve for delight, for ornament and for ability."
—*Bacon.*

In contending against the substitution of science for literature Dr. Temple, head master of Rugby, and later Primate of all England, himself a mathematician of note, said:

> The real defect of mathematics and physical science is that they have not any tendency to humanize. . . . . That study will do most which familiarizes a boy's mind with noble thoughts, with beautiful images, with the deeds and words which great men have done and said, and all others have admired and loved.

To humanize, to enlighten, to cultivate, are indeed desiderata to be striven for in educating young men whose vocation from the moment they pass out beyond the Academy walls, will be to govern and control men. If, however, the mathematical and physical sciences be studied with such earnestness as to leave no time for some devotion to those subjects which familiarize a boy's mind with his duty towards his neighbor, we should not in reason expect young graduates of Annapolis to be better fitted to assume and bear responsibility than they are. True, man begins the real study of mankind by being brought into touch with his fellow beings, but some theoretical work done beforehand, some training of the perceptions, will be found to be of assistance, particularly

in a college like Annapolis, where young men are shut in by a high wall from contact with the world at large. Therefore, presupposing that at entrance to Annapolis, a young man has been taught some of the English and history required for entrance to other colleges, the suggestion is offered that courses in these subjects might be greatly expanded, and that to them might be added courses in logic, economics and philosophy. In the technical schools of the country, courses analogous to the above are obligatory and are held to be a necessary part of the equipment of the specialist to prepare him to play his part in the world. For the same reason such training is needed for naval officers; hence in the suggested "table of the assignment of time," English has been given 22 periods. Even with the present low entrance requirements at Annapolis, these 22 periods would permit some work to be done in history, logic, economics, etc., some instruction to be given having for its aim the unfolding of

> "Good sense, which only is the gift of Heaven,
> And though no science, fairly worth the seven."

Aside from the benefit which would accrue to a young man who studied such subjects as would prepare him to have a clearer perspective of responsibilities and a surer grasp of situations, there would come the further good—as well as pleasure—of knowing better, than he now knows, how to speak and write the English language with propriety. How imperfect the naval officer's education is in this respect is exemplified in many official reports; in the Lucky Bag, published by the graduating class; and in this very paper submitted for your criticism.

But despite the good, professional and otherwise, which I believe would follow from a greatly increased and enlarged study of subjects falling under the head of English, the changes recently made in the entire curriculum by the faculty—as well as those recommended by the Wainwright Board—have resulted in lessening still more the value of cultural studies and relegating to the position of least importance—to insignificance almost—the Department of English.

A recapitulation of what has thus far been suggested concerning changes in the curriculum amounts to the following: Give more time and thought to the study of seamanship, and less to steam; curtail the study of mathematics pure and applied; and increase and bring into due prominence those subjects which might

properly fall within the purview of the English Department. There remains to be considered the study of foreign languages.

Once upon a time there were electives in foreign languages; French or Spanish or German could be taken. 'Tis not so now, though the reason for the change is not apparent. Now the plebe begins a course in French from the moment he enters the Academy; it is the one subject he must study during the summer months. Thus by the time the regular academic year opens he will have had a good enough start to enable him in the 17 periods thereafter allotted in my table to attain considerable proficiency. But if he be required to mix French and Spanish, to give part of his time to the one, and then part to the other, he will fall between two stools. Would it not be of advantage to compel a choice to be made at the start, and to admit German as one of the electives? To those students who intend to devote their time after graduating to science, a working knowledge of German would be of much assistance. Further, no matter what language may be selected, would it not be advisable to require an entrance examination to be passed in it? Every other naval school, as said before, requires a foreign language for matriculation; English boys of 13 years of age must offer French or German at entrance, as well as Latin; the French aspirant must pass in English, also Latin; the German candidate must offer English, also Latin; the Russian and the Italian, French; the Japanese, English and Chinese.

An earnest effort has recently been made at Annapolis to advance in dignity and importance the Department of Modern Languages; but if other departments belittle it, speak contemptuously of it; if there be no bilging when unsatisfactory work is done in a language, so long as the 2.5 is reached in mathematics, not much proficiency can be hoped for; and if to these drawbacks there be added others—that the department itself is perhaps not so well organized as it would like to be, that its methods are not so highly esteemed as those of other departments, that on the whole its good results are not sufficiently appreciated—the progress of the midshipman in acquiring one of the necessary accomplishments of his profession will be slow and practically of little benefit.

Instead of framing a definite answer to the question some naval man may perhaps ask, "What is the good of learning a foreign language, we get along very well without knowing any?," atten-

tion may be called to the fact that in other colleges, whether the course taken by the student be technical or not, the acquirement of a modern language is a necessity towards obtaining a degree. Why then make an exception of Annapolis? Her graduates should be intellectually the equals of other graduates, her men as accomplished as other men. "As many languages as he has," says Emerson, "so many times is he a man."

A special value of the study of a language lies in its usefulness as a means of training the memory in contradistinction to the value of that mathematical training which is so excellent a stimulant to the mind. Again, the study of a language incites precision almost as much as the pursuit of mathematics. Great care must be observed in translating, great accuracy in remembering and applying the rules of grammar. In this way our knowledge of our own tongue is augmented. "A man who has no acquaintance with foreign languages knows nothing of his own."

There are other reasons which might be adduced to prove that the systematic study of a foreign language at Annapolis would be salutary: for instance, something might be said of the pleasure which would result; of the information about men and manners which would be gained; and in general, of the culture which would be acquired. Enough, however, has been written, to point out that the spirit of "let alone" which has nearly always pervaded the midshipmen in their relation to the study of a foreign tongue ought to be exorcised, and a more reverential disposition installed. And this is equally true of English studies. To create this needed ardor the faculty should demand the same high standard and efficiency in cultural studies as have from the force of habit become inherent in vocational studies; for only by understanding the usefulness of both kinds of studies, the cultural as well as the vocational, can we hope to make from our knowledge the wings wherewith to fly to heaven.

THE BOARD ON CURRICULUM.

"The schoolmaster is abroad, and I trust to him, armed with his primer, against the soldier in military array."—*Lord Broughton.*

In what is written above the opinion is expressed that our Alma Mater may be perhaps somewhat neglectful of the means and methods she should employ to educate us. And, it has been intimated that it might be for our profit were she to take cognizance

of the twofold division of the aims of education, the vocational and the cultural. "Vocational study is, as a rule, special and minute; cultural study is general and broad; the one trains to produce; the other, to appreciate. Skill results from vocational study; taste, from cultural." Are not we men of the navy too prone to regard the scientific attitude towards life as something final, conclusive, perfect? Surely in all of us there is an æsthetic side which ought to be awakened, guided, formed, if we are to appreciate to the full the opportunities for usefulness and happiness our career holds out to us.

But be this as it may, even along vocational lines, despite the main conclusions of the Wainwright Board, our Academy can not be said to be proceeding satisfactorily, as was shown in preceding chapters where Admiral Brownson's official report and Lieutenant Cluverius' remarks were quoted. Other confirmatory evidence of the unsatisfactory way of conducting our educational affairs is supplied by Naval Constructor McEntee, a graduate of both Annapolis and the Massachusetts Institute of Technology. In the March, 1906, PROCEEDINGS OF THE U. S. NAVAL INSTITUTE, he writes:

> I wish to say that there are many admirable features about the Naval Academy course, not especially in the marine engineering part of it, but in the whole academic system, some of which, undoubtedly, excel the corresponding features of other leading schools in the country; but what I should like to make clear is that the system, the text-books, and the scope of work in the various branches at the Naval Academy, is determined to a great degree by the graduates of the Naval Academy themselves, who have little opportunity for getting in touch with the latest and most advanced principles of technical education at the leading schools in this country. The result is that the system has grown up quite independently, and has in it a number of points which could, undoubtedly, be eliminated or changed to advantage.

Here we have a condemnation, as it were, of the plan that the overhauling of the curriculum can be best done by a board of sea officers. And here also, the course in marine engineering is damned with faint praise, despite the testimony of officers that in steam engineering duties alone is the graduated midshipman proficient. To this latter part of Mr. McEntee's observations, Professor Alger of the navy made answer as follows:

> The British Admiralty committee of which Professor Ewing, quite an authority in thermodynamics, was a member, investigated very thoroughly

the present engineering course at the Naval Academy, and their expressions of approval, verbal as well as their subsequently published report, are a sufficient contradiction of Mr. McEntee's ill-founded condemnation.

Into the merits of this particular part of the controversy we do not intend to enter; perhaps Mr. McEntee had in mind only the value of the preparation he received towards preparing him to become a naval constructor. With his major contention, however, that the whole Academic system, the text-books and the scope of work in the various branches, could be changed to advantage, we are in hearty accord. And as additional support to this way of thinking, we offer what the above-mentioned Mr. Ewing, Director of Naval Education, has to say to the British Admiralty in his report on the training of midshipmen at Annapolis. Commenting favorably on the system of recitations, Mr. Ewing adds, however, that the "system lacks much that makes good oral teaching valuable" and that in some subjects "it was difficult not to suspect that the preparation had in it a large amount of 'cram.' . . . . The absence of any examination from outside is felt by some friends of the Academy to be a weak point in its organization. The comment was made to me by more than one past or present member of the Board of Visitors that there is a lack of outside criticism, and of opportunity on the part of the cadets and their instructors to measure themselves by comparison with members of other educational bodies."

Now whether there be a concensus of opinion or not as to the cause of the exceptionable features these men see in the course of study at Annapolis, the fact remains that in their judgment, based on their experience and intelligence, there is something unhealthy in the present system; and it can evidently be improved, if not cured, by changing the regimen now in force. How to bring about this change may prove to be somewhat difficult; for the faculty at Annapolis believes, so one gathers from reading Admiral Brownson's report, in letting alone what it has already decided is well enough; and the admiral's plan of a board of sea officers, having been tried, has entirely failed to remedy what the writer regards as serious faults, going in fact still further in the direction of emphasizing the importance of mathematical as opposed to cultural studies. Suppose, then, some other plan be suggested, one somewhat like the following:

A mixed board composed of both naval officers and civilians; the civilian members to be:

1. A college professor of mathematics, preferably an Academy alumnus.
2. A college professor of physics.
3. A college professor of history and economics.
4. A college professor of modern languages.
5. A college professor of English.

The naval officers of the board to be:

6. The Chief Intelligence Officer.
7. An officer who has served as an attaché.
8. An officer, graduated an engineer but now doing a seaman's duty.
9. An officer, a graduate of both Annapolis and an American college.
10. An officer graduated, say, 20 years ago, who has never taught at Annapolis.
11. An officer graduated since the promulgation of the amalgamation law.
12. An officer, to be president of the board, who has been superintendent of the Academy.

Many objections will be raised against a board constituted as above; especially, however, against the civilian members, on the ground that such men can not intelligently decide what shall be the theoretical and intellectual equipment of a naval officer. The answer in part is as follows: In every college, courses are offered in all the subjects, except gunnery and seamanship, taught at Annapolis; that modern methods of instruction are better comprehended by civilian professors than by naval officers; that by bringing civilians in close touch with the Academy the weak points in the instructional organization will be exposed, and finally that an intellectual comradeship between Academy and college will be cemented. There need be no apprehension that the civilian element of the board will dominate the naval element, for the numerical ascendency of the latter will prevent the board from straying too far from the sea.

The board would have to scrutinize carefully the fundamental principles now underlying the curriculum and determine the worth of each order of facts as regulating the several kinds of activity of the naval officer's life, and their relative influences as knowledge and discipline. Then would follow in due course, as a consequence, a logically deduced plan of education in which the intrinsic, quasi-intrinsic and conventional importance of each order of facts would be assigned that value in the curriculum which comported with the vocational and cultural aims of the Academy. For those students who might wish to "probe beneath the superficial crust," intending to become specialists in steam engineering,

or ordnance, or mathematics, or electricity, etc., electives would be provided; and in every direction courses of study would be mapped out, lectures instituted, and instruction made more modern and more stimulating.

With a long pull and a strong pull and a pull altogether, such a board could and would, it is believed, lift our Academy out of the ruts in which her wheels have been running, and start her on the high road of modern progression. Truly there is much that is fascinating in the contemplation of what might be! One can even see, in his mind's eye, the spreading out of our Alma Mater until she shall become a great naval university, with her schools of ordnance, of electricity, of construction, of engineering, etc., all located at Annapolis. Such an evolution, fanciful as it may appear, is not altogether an impossibility: the board could arrange for it; and if the entire navy were to desire it, work for it, and with heart and soul try to find the means to the end, perhaps the dream would become a reality.

ARMS AND THE MAN.

"There were gentlemen and there were seamen in the navy of Charles II. But the seamen were not gentlemen; and the gentlemen were not seamen."—*Macaulay.*

What, in educating young men at the Naval Academy, should be the ultimate end sought? To turn them out officers and gentlemen. The word officer connotes seaman, gunner, navigator, engineer, electrician, disciplinarian; a man of resources, of command, of dignity; a man of practice and a man of theory. The intent of this word officer may be subdivided; one part may comprehend, under the generic term seaman, the sailor, the gunner, the navigator, the engineer, etc., and the duties pertaining thereto; that is, the duties inseparable from the management of a ship. The other part may comprise proper official conduct, cognizance of the rules and regulations, ability to command, respect for office, and the like. The word gentleman connotes—among many other specifications—good manners, agreeable address, admirable behaviour, "a man of education and good breeding."

It does not necessarily follow that because a man is a good seaman he will be a good officer; for it has been said of an officer that he was the best of seamen, but the poorest of officers. So too it has been said he was the best of officers but the poorest of seamen.

And it may be further said that an officer may be neither an efficient officer nor an efficient seaman, but still be a gentleman. In import, however, the three terms, seaman, officer, gentleman, when applied to naval officers, are so closely allied, that to withdraw any one of them from the other two, in describing the fitness of a man to perform his duties in the navy, will leave him so badly maimed that it were better he should hand in his resignation. Lord Nelson said to a young man just appointed a midshipman in the English navy:

> As you from this day start in the world as a man, I trust that your future conduct in life will prove you both an officer and a gentleman. Recollect that you must be a seaman to be an officer; and also that you cannot be a good officer without being a gentleman.

Annapolis takes cognizance of so much of the above doctrine as is bound up in the principle that a man must be a seaman to be an officer. All the instruction it gives has this fundamental object in view—to prepare men to become naval officers. And this postulate of our education is never afterwards lost sight of; for to obtain each and every promotion we must pass an examination in professional studies, and our official conduct must bear close scrutiny.

To secure that other equally vital requisite of the good naval officer, that he must be a gentleman, no particular measures educative or otherwise are taken by the Naval Academy; it is assumed that the officer will be a gentleman, must be a gentleman; that in essence the officer is the gentleman. None the less, although the two words officer and gentleman ought in the navy to be synonomous, they are not necessarily so. For among the articles for the government of the navy the word officer often appears, but never the word gentleman. However, among the offenses falling under Article 22 of these articles is "Conduct unbecoming an officer and a gentleman," for which the limit of punishment is dismissal. The coupling of the two essentials in the one offense would seem to indicate that they cannot be dissevered; but conceivably an officer might plead guilty before a court martial to the one part or to the other part, and the court might recognize the differentiation and might sentence him to dismissal on either count. We are thus brought to see that there are two supreme attributes which *a priori* must be inbred in him whom our Academy is to start in the world as a man: he must be possessed of the heroic virtues, and he

must be possessed of the amiable virtues. Upon our Alma Mater is therefore imposed this twofold duty in rearing up her sons for the navy; and in keeping in clear sight the one, it behooves her to take care lest the other may through inadvertence be suffered to fall into some neglect. For whether upon entering the Academy a young man has preconceived notions of how to behave like a gentleman or has had no refining or other gentle experience, his ideas of conduct after he enters will undergo changes; and his manners, by intimate contact with classmates for four years and by observation of the deportment of his superiors, will be shaped. It is example that we follow. Place over us men whom we distrust, whose word we sometimes doubt, whose fairness we question, who are rude and rough, and the result will be that we will insensibly conclude that *esprit de corps* is not that honorable and fine thing we had supposed it to be; and so, perhaps, we ourselves will adopt a few ways that are dark and tricks that are vain. On the other hand, if our instructors are men of virtue, refined, cultured, dignified, we too, will take on these qualities, some of them at least, and acquire that "indescribable something" so necessary to the completion of a gentleman. "The power of manners is incessant, an element as unconcealable as fire."

Manners, towards the making of the man, are improved by culture—by the enlightenment and discipline acquired by mental and moral training; for culture, while it may not be by itself vital to the making of a gentleman—since a most cultured man may be a thorough blackguard—is yet of great assistance to a man whose profession, like the naval officer's, often compels him to meet people, and to pose always as the honored representative of his country. Society imperatively requires an outside knowledge of many things. Herein may lie some reasons for broadening the curriculum, for selecting large-minded men for instructors, with as little provincialism as possible, for bringing the Academy, its instructors and its midshipmen, into touch with the world, and for endeavoring to inculcate what I have called the amiable virtues.

It can happen that a man who cannot read or write may possess such grace, tact, sympathy and perception that he can conduct himself with propriety in any situation. But by and large a liberal education and *savoir faire* help a man. They inspire confidence, widen the view, and tend to perfect the judgment. That officer the horizon of whose information extends no further than

the ship's rail, is scarcely an agreeable companion. Of him the story is told, that, knowing nothing interesting to write about, he sent home a list of the after-guard. The great movements of the world he cares not for; nor reading; nor politics; nor art. He seldom goes on shore; he avoids the clubs; he dodges society; he abhors any effort which necessitates his mixing with his fellow men. All because he is dull; he is dull because he has been taught but one thing; and he has been taught but one thing because only in that way could he be made a naval officer, and a naval officer need know nothing beyond the material elements which go towards composing a man-of-war. Jowett, the distinguished master of Baliol, once said: "No man will be a first-rate physician or engineer who is not something more than either, who has not some taste for art, some feeling for literature, or some other interest external to his profession."

That in much of the foregoing I may have failed to distinguish between the worth of each order of facts as regulating the several kinds of activity of the naval profession, intrinsically, quasi-intrinsically and conventionally, and their relative influences both as knowledge and discipline; that my conception of the obligation resting upon the Naval Academy may be far-fetched, even radically wrong; that I may have assumed that the one sinner, and not the ninety and nine just men, is the typical man; and that I may be talking a little nonsense, may be admitted without vitiating the profundity of the meaning to be found in the concrete expression, "an officer and a gentleman," or lessening the responsibility which ought to be laid upon our shoulders by our Alma Mater to live our lives in accordance with that meaning. Wrote Bacon:

> I hold every man a debtor to his profession, from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves by way of amends to be a help and ornament thereto.

THE SUPERINTENDENT.

> "A place sheweth the man; and it sheweth some to the better and some to the worse."—*Bacon.*

At the head of the Naval Academy, in charge of the institution and of all persons and things connected therewith, stands the superintendent, an officer of the navy, answerable for the manner in which he conducts the affairs of his office to the Chief of the Bureau of Navigation, since that bureau has cognizance of matters

relating to the education of officers, and also in close touch and communication with the Secretary of the Navy, to whom (as well as to the Bureau of Navigation) plans are submitted and suggestions made, and through whose direct interposition, if necessary, the superintendent is enabled to carry out such policy as the Secretary may approve.

Only an able man can have a wise policy and only a man of earnest endeavor can carry out that policy; intellectual capacity and a forceful nature are necessary. When such a superintendent goes seriously to work to make better and more thorough the instruction and discipline at Annapolis, he should receive the commendations of the alumni and the support of the government at Washington, and be permitted to reign supreme in his kingdom by the Severn; for much honor and distinction will attach to that ruler who so exalts our Alma Mater that all men will see her good works and glorify her. His name ought to be writ large in the temple of fame.

There have been during the past forty-odd years (1865-1907) three great superintendents of the Naval Academy: Admiral Porter was one, Admiral Rodgers was another, and Admiral or Captain—but the third great man (maybe there is a fourth) is that one who my readers may fancy has conspicuously developed the culture, the honor, the patriotism of the young men over whom he exerted his influence and authority.

Odd as it may seem, the personal characteristics of these two notable superintendents were widely different. Admiral Porter was a whole-souled, hearty, deep-water type of gentleman and officer, of unusual executive and administrative ability coupled with a forceful, pleasant personality, and an instinctive sense of how to get on with men, young and old, and to make them, one and all, like him and obey him. He was an enthusiastic, inspiring worker. He exerted himself to the utmost to improve the condition of affairs at Annapolis, and he succeeded splendidly. He inculcated an *esprit de corps* which has lasted—with ups and downs—to the present time; he raised the standard of scholarship; he made the school a college; he converted boys into young men.

Admiral Rodgers was a calm, suave, dignified man; in appearance and bearing a typical officer and gentleman, one who looked to be, and in fact was, the master of the situation. Of distinguished presence and courtly manners, Rodgers impressed his

aristocratic personality upon every one with whom he came in contact; and whether his midshipmen liked him or not they respected him, looked up to him, and honored him.

Park Benjamin, in his book, "The U. S. Naval Academy," writes that "critics of Admiral Rodgers say that he aimed at converting a congress of boys into a galaxy of Sidneys and Bayards." "Sir Philip Sidney (1554-1586) was the idol of his time. . . . . Fair as he was brave, quick of wit as of affection, noble and generous in temper, the darling of the court and of the camp, he combined the wisdom of a grave councillor with the romantic chivalry of a knight errant. He flung away his life to save the British army in Flanders, and as he lay dying they brought a cup of water to his fevered lips. He bade them give it to a soldier who was stretched on the ground beside him. 'Thy necessity,' he said, 'is greater than mine.'"

The Chevalier de Bayard (1476-1524) was "simple, modest, a sterling friend and tender lover, pious, humane and magnanimous. He held together in rare symmetrical union the whole circle of the virtues, ... especially did he love that kingliest of virtues, justice. . . . . Even his adversaries experienced the fascination of his merits and joined in the sentiment that he was, as his contemporaries called him, 'Le Chevalier sans peur et sans reproche.'"

Of course Admiral Rodgers did not succeed in perfecting such an ideal; none the less by precept and example he benefitted the young men at Annapolis and eventually the service at large; for the nearer officers of the navy approach in character to Sidney and Bayard the better will be the personnel of the navy. To fling away our lives to save our country and to be without fear and without reproach is our bounden duty, and that superintendent who tries to teach us this duty is worthy of our highest regards and respect.

I can conceive of no more distinguished or more honorable duty in time of peace than that which devolves upon that officer who is appointed Superintendent of the U. S. Naval Academy. Indeed, since this high position demands from him who holds it the exercise of talents and accomplishments possessed in proper proportion by only a few men, it ought to be regarded as the most important post to which an officer can aspire. Rightly to fill the billet a man must be prepared to play many parts. He must be

an officer and a gentleman; an executive, an administrator, a leader. Gentle in manner but firm in deed, he must comprehend nevertheless the "quality of mercy," as well as the power of the mailed fist; and he must have a profound sympathy with youth. He must be true and just in all his dealings and hurt nobody by word or deed; and his utmost endeavor must be to make every man, old and young, give forth the best that is in him. It becomes, therefore, a matter of the most serious consideration to detail for the duty of superintendent of our Naval Academy an officer of exceptional tact, uncommon perspicacity and consummate wisdom, a man who shall be recognized instinctively, by midshipmen and instructors alike, as their guide, philosopher and friend, as well as their master and superior officer.

This man of might, if he is to succeed, must be conspicuous for courage, for ability, for gentleness and for knowing the right and daring to do it; and he must love the navy better than he loves his life. How many superintendents have possessed the many sides, the large minds, and the deep sagacity to entitle them to be distinguished above their fellows because of the manner in which they filled this arduous, trying position of superintendent? I have mentioned the names of two officers who, as heads of our Academy, have won fame, and I have left it to you, reader, to name a third. Can you recall the fourth or the fifth great man? Yet from 1865, when Admiral Porter first took command, up to a year ago, when Captain Badger was ordered to the Academy, there have been 14 superintendents.

If it be assumed from what has just been said, that our Academy has at times been indifferently well governed because the right man has not always been appointed to the right place, then somebody must be to blame. Perhaps we will not go far adrift if we attach this blame to the navy itself. To put the question bluntly, Who cares? Do you or I or the other men of the service ever feel concerned about the selection of the officer who is to become the superintendent of our Alma Mater? Do the alumni ever get together for the purpose of advocating the appointment of the man we consider the most worthy? Do we take any interest at all in the matter? No. The appointment is left nominally to the Secretary of the Navy, but really to the Chief of the Bureau of Navigation, an officer so overwhelmed by other business that he can not, with the best intentions in the world, give to the affairs

of the Naval Academy that serious and close attention which they require.

To choose a man to be president of a civil college requires months of patient inquiry and careful investigation on the part of the trustees, assisted by the suggestions and advice of individuals and alumni associations all over the country. But the obligations to be assumed by the man thus selected can hardly be compared in importance with the responsibilities which are placed upon the officer detailed as Superintendent of the Naval Academy, where not a leaf must fall to the ground without his knowing it and being held accountable for it.

Sometimes, it has come to pass that a very capable officer in many ways, though lacking those extraordinary qualifications which ought to characterize the man who is to govern a great naval school, has been appointed superintendent, and in a short time his ineptitude has been perceived. But the pity of it is that this estimable gentleman and otherwise competent officer has been retained as superintendent long after his unsuitableness has been discerned.

How to secure the selection and retention of that officer who is so gifted by nature, experience and education as to know how to govern in the right way, is a question that ought to appeal to the heart and head of every graduate of Annapolis, to the Secretary of the Navy and to the President of the United States; for on the answer the safety of the nation may depend. Should, however, in spite of every care, the selection of a superintendent prove to be an unfortunate one, let no compunction intervene to prevent his detachment and the appointment of a successor. "A ruler who appoints any man to an office when there is in his dominions another man better qualified for it, sins against God and against the state."

THE OFFICER IN CHARGE.

"Discipline is not only the removal of disorder, but, if any visible shape can be given to divine things, the very visible shape and image of virtue."—*Milton.*

The greatness thrust by virtue of the office upon the Superintendent of the Naval Academy, and the superlative care which ought to be taken in selecting a recipient who can bear with equanimity such high station, have been indicated in the preceding

chapter. Our superintendent should be a man of the strongest personality, of imposing presence, of cultivation and refinement, and of admirable demeanor; and to his midshipmen and his assistants he should seem to be every inch a king who can do no wrong.

In a less degree, perhaps, every officer who is intrusted with the administration of the Department of Discipline, should likewise possess these characteristics which serve always to mark the man of command. For second only to the Superintendent in the importance of the office he holds, comes the Commandant of Midshipmen, the head of the Department of Discipline, the regulator of the moral and physical life of the midshipmen, the awarder of demerits and punishments, and of merits and rewards as well; though his abilities cannot be said to be as severely taxed in adjusting the latter as in assigning the former. Associated with him, but under him, are several officers who are his assistants, and who are in no way connected with the theoretical educational force.

The duties pertaining to the Department of Discipline may be briefly stated to be to make midshipmen behave properly. Rules of conduct which must be lived up to are printed; and besides, there are many unwritten regulations applicable to the correct conduct of every man, which must be vigorously enforced. To see that these laws, the written and the unwritten, are understood by the midshipmen, and that full faith be accorded them and implicit obedience result therefrom, is what the Department of Discipline is charged with.

To these officers of the Department of Discipline, the young man must look for inspiration and example in all things practical and naval and personal; for midshipmen and officers in charge are in close contact all the time, and so situated that neither should ever lose touch with the other. The relation existing between the two may be broadly likened to that existing between master and slave. Not that it is the least bit objectionable on this account, for in a military organization to secure efficiency there must be implicit faith in, and absolute obedience to, superiors on the part of subordinates—

> "Theirs not to reason why,
> Theirs but to do and die."

But the methods employed in compelling this obedience and the manner in which the customs and spirit of the service are implanted, are of the utmost consequence. Remember also that the

officer in charge is not only the master, but as well the guardian; in a measure he stands in the place of a parent, and is to some extent responsible for the development of the boy's human nature; he should, therefore, feel obligated to make such use of the great power with which he is invested as will induce midshipmen to be contented and obedient, to be happy and trustful. The moral obligation this position of mentor imposes on an officer is certainly a heavy one: to be prepared at all times and at all points to guide, to correct, to help; to do and say the right thing; to know when to forgive and when to destroy—surely only a gallant officer and a Christian gentleman can adequately perform such duty.

Sometimes there have been officers in the Department of Discipline who, in the opinion of the midshipmen over whom they exercised control, have been incapable of meeting convincingly the demands of their position, being, perhaps, too old, too bad-tempered, too hard, or even too lenient; good enough men in many ways, but evidently, since they could not appreciate what goes to make up a spirited young man, out of place in the Department of Discipline. Such officers, whether they be popular or unpopular, are not likely to be inspiring leaders. Also it has happened, not often, fortunately, that an officer has been assigned to duty in the Department of Discipline who, so midshipmen will tell you, devoted all his time and energy to catching and spotting midshipmen, to making life a burden to them. Such an officer may be ignorant of what are the requirements of his position; but sometimes, rarely however, he has seemed to be constitutionally malevolent, and has so conducted himself as to cause midshipmen to think that he was an officer only in so far as he wore a uniform, and a gentleman only in so far as he was an officer. True, this may be but a young man's point of view, and perhaps on that account somewhat narrow and perverted; none the less we should bear in mind that young men possess a considerable amount of intuitive perception.

Is it necessary in order to saturate the minds of young men with ideas of discipline, and to make obedience to orders an instinct, to search diligently and use all means, fair and foul, to discover every delinquency? Young men—and old men, too—are sometimes unintentionally heedless and careless, and transgress rules and regulations without a thought that they have done those things which they ought not to have done. For such offenders a kindly warning

or a friendly word of reproof, or perhaps the ignoring of the peccadillo, may often prove to be more efficacious towards insuring subsequent good behavior, than an angry reprimand and a harsh punishment. Even when rules are deliberately broken there may be times when a sympathetic admonition or the infliction of a mild penalty will accomplish a better result than an outburst of indignation coupled with the awarding with fiendish glee of a "bilging" number of demerits.

The story is told that once a youngster was caught smoking, caught accidentally as it were, for the officer in charge was not sneaking around in search of prey; he was of the kind that struck his quarry in the open; and this good-hearted officer said with never a trace of malice or anger in his voice or manner, "Look here, Mr. Dash, you've already got a great many demerits and if I report you for smoking it will go hard with you, why not knock off? Now I'll not report you this time, and I hope you'll try to do better hereafter. No, No, Dash (he dropped the 'Mr.' this time), no pledge or promise, just go ahead and do your best. That's all." Doubtless every graduate can tell of similar experiences.

To succeed as an officer in charge a man must have a love for and belief in youth. He must remember that he himself was once a young midshipman full of health and vigor and life. He must recall that he often deserved to be spotted when he was not, and likewise that he sometimes was spotted when he deserved not to be, and that in the latter case he deeply resented the injustice whether it was intentional or not. And he must never forget how he despised that officer who refused to listen to an honest excuse and intimated that perhaps it was offered not in extenuation, but in an attempt to deceive.

"What kind of men, my son, have you as officers in charge?" "Well, father, there are four officers, two of them good, one bad and one a sneak." "Don't the good ones spot you?" "I should say they do, but they know how to do it." The answer to "how to do it" was laconic: "They treat us like gentlemen." The word gentleman, I take it, is here applicable to both parties to the suit, and may be comprehensively defined as one who can never give offense unintentionally. The bad officer in charge was the one who was hard by nature, born so, "my son" said, and not purposely so. The sneak was the one who slipped around to catch you, and enjoyed spotting you because he wanted to bilge you; he hated midshipmen.

To promote the moral welfare of the midshipmen; to encourage and assist them to obey orders and to be cheerful and satisfied with their hard lot; to implant in them an abiding faith in the rectitude of the naval life, is the task set before the department of discipline—a task sufficiently difficult to demand for its full accomplishment all the time, thought and cleverness of the Commandant and his assistants under the direct supervision of the Superintendent. And he and they should never lose sight for a moment of the mighty truth that seniors in charge of and responsible for the conduct of juniors owe to these young men a duty every whit as sacred, and therefore as obligatory, as the duty these young men owe to their superiors.

Discipline stands for something better and higher than chastisement. It stands for training, for correct bringing up, and in addition in the navy, for devotion to the service, for *esprit de corps* and for love of country. Discipline, as here used, is more important than mathematics, or steam engineering, or skylarking at drill; and in order to inculcate its underlying principles, those of virtue, honor, patriotism and subordination, it must be taught by men inspired by these principles—by men who believe it to be a divine thing, the very visible shape and image of virtue.

THE INSTRUCTOR.

"Delightful task! to rear the tender thought,
To teach the young Idea how to shoot."

—*Thomson.*

Much of what has been said about officers in charge applies with equal force to the men who compose the strictly educational staff of the Academy. And these men, whether officers of the navy, professors or instructors, should in addition to being men of strong character, forceful and broad-minded, possess also great capacity for teaching and for imparting their knowledge to their pupils. Extensive learning is an excellent and desirable qualification for the teaching profession; but alone, erudition is not sufficient to insure a successful career as an instructor: something more is quite as essential and equally important; and that something is compounded of aptitude, sagacity, penetration. Many scholars (learned persons) turn out to be indifferent teachers because they have not a natural disposition for the particular business of teaching, are wanting in keenness of discernment, and are unable to reach the heart of the boy as well as that of the subject.

Long ago there was at Annapolis a little old mathematical fiend who knew calculus and cognate subjects better than his pupils knew their alphabet. His information, along these lines, was so ponderous and profound that it weighed heavily on the minds of his pupils and depressed their efforts. The professor was not wholly disliked by his pupils, for he was not by nature a mean man; none the less they dreaded having to recite to him, for they felt they could not do work that would satisfy him. This man, despite his mathematical knowledge recognized by every one, failed as an instructor because he could not realize or understand the nature and capacity of his pupils.

Of a different type was another teacher, ambitious, thoroughly trained and educated, decidedly capable, and of much force. But he was inordinately conceited, and had a supreme and lofty contempt for midshipmen and for their attainments. Towards his pupils he was sarcastic, domineering, mean; he was a bully. Naturally he was hated and his methods detested. This man knew how to teach, but the spirit that moved him was so antagonistic to the spirit controlling his pupils that fully half the benefit which ought to have followed from his teaching was lost. For no youngster who fears and hates his instructor can learn as much as when that instructor is trusted and respected. "Those from whom we are always learning are rightly called our masters; but not every one who teaches us deserves the title."

Of still another type was a man good to look at, an officer and a gentleman. He liked midshipmen, and they knew it; so in return they liked him, respected him, and tried to please him. Perhaps I can better indicate the situation by recounting an incident. One day Brown was called on to explain the nebular hypothesis, which after a sorry attempt he gave up in disgust; next, our instructor, cautioning Brown to listen, called on Jones, who made a dry and uninteresting though fairly satisfactory recitation. Then again was Brown called on. By this time Brown had his wits about him, and, realizing to the full that a very kind man was giving him another chance, he eagerly took it and won handsomely. The point in the above incident is that the instructor saw from the first that Brown knew his lesson but was "in irons" when first called on and that with a little coaxing he would fall off on the right tack, and the instructor realized that it was his duty to help Brown.

Three types of instructor have been shown above: 1. The man who knows his subject but does not know how to teach it, and has little sympathy with his pupils; 2. The man who knows his subject and knows how to teach it, but nullifies his knowledge by his dislike of his task and his contempt for his pupils; and 3. The man who knows his subject and how to teach it, and who is fond of his work and attached to his pupils. Perhaps nearly all educators of young men may be classified as belonging to one of these three types; but which type predominates at Annapolis let your own experience, now that you are officers in the service and have formed your own opinions, decide.

Pedagogy is the science of teaching, the application of exact methods to problems of education; and whereas some men are pedagogues by nature, just as some men are musicians, yet most teachers have to learn pedagogy much as they have to learn other sciences; witness the many normal schools and the pedogogical courses in universities. Hence the fact that a man is an extraordinary mathematician should be recognized as but a fact and not as of itself sufficient to qualify him to instruct young men. It is the teaching dexterity, the ability to give out intelligently from himself to those who are to be taught, and the faculty of arousing enthusiasm in his pupils, that make for efficiency in an instructor. This means far more than a knowledge of the contents of books, it implies a knowledge, instinctive or acquired, of psychology. As said before, something of the boy's mind, something of his brain, something of his heart, something of that fellow-feeling which makes us wondrous kind, must inhere in him who is to be a great teacher of youth. Your man who regards his pupils as fools will surely fail to make wise men of them. Cynicism, sarcasm, disdain are excellent weapons in the hands of a giant, but it is tyrannous to use them like a giant.

Perhaps some instructors, officers and civilians, are not duly impressed with the grave responsibility which rests upon him who essays to teach young men. To go perfunctorily to class, to hasten through the hour of recitation, to hurry home and give no serious thought to what has been done to-day and what must be done to-morrow; to be careless, disinterested, and unconcerned; to be cross and rude, and to hold his duty as a bore, can never make an inspiring teacher. We must have enthusiasm in the class room, good-fellowship, respect for pupils, consideration for youth, and

genuine fondness for teaching, if we are to secure the results it is our duty to endeavor to secure.

The suggestion is therefore offered that our Alma Mater, when composing her educational staff, should select only such civilian instructors as have served long enough in a first-rate college to be recommended as most competent masters, and only such naval officers as are known to be thoroughly fitted mentally and temperamentally for the exercise of the high office of teacher. Whether it would be advisable or not to have civilians as instructors rather than naval officers is a serious question. I am inclined to think that excepting for the teaching of professional or technical naval subjects, better results will follow from civilian instruction, especially if the civilians be carefully selected, be required to keep in close touch with the educational movements in the colleges, and be given the same status and privileges as college teachers. In this connection, the benefit which might follow from installing retired naval officers as instructors ought not to be overlooked. Some of these men are admirably equipped for professorial work. They like it; and were their stay at Annapolis for some time assured, they would gladly take that duty and creditably perform it, and their naval training and experience might enhance their usefulness.

In the purely professional subjects of gunnery, seamanship, navigation, etc., the active naval officer, I submit, should always be the instructor, for he alone can bring that experience and live interest to bear which will arouse the enthusiasm of his pupils and impress them with the importance of these great elements of the naval profession. However, the point to be emphasized here is the absolute necessity of securing, for the Academy, men, whether officers or civilians, who know how to teach, in contradistinction to those who sometimes are appointed as instructors because of their theoretical rather than because of their pedagogical acumen, and who are retained in their important positions after their incapacity as teachers has been known to all concerned. Finally, your man who brags about the low marks he gives and the number of midshipmen on his unsatisfactory list should not be tolerated.

Good teachers to do good work must feel secure in their position. That department made up of a number of earnest men who have been associated together for a long time will be more efficient than another department in which the teachers have been constantly changed. For in the one there will be progression along

well-thought-out lines, and concerted efforts to keep not only abreast of, but in the lead of, educational movements. But in the other nothing permanent can obtain, since those who wish for and plan a rational advancement will be removed from office before they can accomplish anything of serious value. There will always be more or less disorganization where there is that instability of purpose which attends the deliberations of men who realize that their tenure of office is precarious.

In conclusion, the suggestion is offered: 1. That the mathematical, science, language and English departments might be organized on a permanent basis, that is, with retired officers and college professors as permanent instructors; and 2. That the purely professional departments might be composed of active officers only, so detailed that one-third or one-fourth of the instructors would be removed every year and the entering third or fourth would go direct from ship to shore.

We come now to a consideration of the text-books to be used by these teachers and the method in vogue in instructing midshipmen.

TEXT-BOOKS.

"College education is the reading of certain books which the common sense of all scholars agrees will represent the science already accumulated."—*Emerson.*

The text-books used for study by the midshipmen at the Academy ought to be the best for educational purposes that can be obtained, and to ascertain which books may be the best, consultation might be held with the teachers of such special subjects as are common to both our colleges and our Academy. Mathematics, mechanics, English, history, modern languages, etc., are subjects taught by the most skillful and experienced professors in these branches in the country; and the text-books recommended by these men are presumably the best, for they are the books which these teachers, with their long years of practice and observation, have found most helpful in furthering their work.

To write a suitable text-book calls upon the author for a comprehensive knowledge of pedagogical methods as well as a thorough familiarity with the scope and significance of the subject which he wishes to set clearly and intelligently before the student; and there are rules and regulations governing the order, arrangement and contents of text-books, in much the same way that there are

similar restrictions controlling the composition of novels, essays, etc. It may well happen that naval officers and other instructors at Annapolis possess the requisite knowledge, experience and inspiration to produce excellent text-books, in every respect as good for instructional purposes as the books produced by college teachers and professional text-book writers. But the weight of evidence is apparently against the Academy books, if the lists of text-books to be found in some college catalogues can be offered to support the contention that speaking generally, our instructors do not often write text-books on scientific and other subjects, which are used by teachers of kindred subjects in other technical colleges.

The objection may be offered that the aim of the technical education at the Academy is different from that of other technical schools, and that therefore the teaching and text-books, the situation being different, must also be different. This may be true, though perhaps it is only partly so; that is, while the ultimate aim of the training at Annapolis may not be the same as that of other scientific schools, yet the means to achieve certain ends common to both the Academy and nearly all technical colleges ought to be practically and theoretically the same. As said above, modern languages, mathematics, physics, English, history, and some other subjects are up to a certain point taught in every college and the method of teaching them is generally the same; which would seem to indicate that such method and such books are the best that modern educational experience can adduce. At Annapolis, however, the method of teaching and the text-books used are largely peculiar to the Academy; therefore the wisdom of such isolation in educational procedure may perhaps be doubted. I suggest that both method and text-book might be submitted to the test of comparison with what is customary elsewhere, and if when weighed in such a balance they be found wanting, other methods and other books might with propriety be substituted.

In glancing over a list of text-books used at the Academy, the observer will see that a single instructor has here and there written text-books on different subjects; also that some heads of departments are authors. I offer no comment on this, for of course purely professional subjects must be written of by purely professional men, saturated with technical information. But on the other hand it does not follow that mere saturation will insure the production of suitable text-books. Do the text-books which treat

of seamanship, ordnance and gunnery, naval tactics, navigation, steam, etc., supply such information to the student as will enable him to obtain a thorough groundwork or good working knowledge of the subject? I put the question hoping to attract the attention of some men of the service to the importance which should be attached to the instruction given at Annapolis.

The value of text-books as a means of teaching is greater at the Academy than at other institutions for the reason that at Annapolis, to impart the desired information, dependence is placed almost wholly upon the printed page. Instruction is not given by lectures; nor in the assignment of lessons to be learned is the student compelled to pore over reference and other library books. Instead he is given a number of pages of the text-book, which he must learn as the lesson for the next day; if these pages be well learned a good recitation will be made and a good mark will result. This method of instructing by the use of text-books alone does not call for high scholarship from either teacher or pupil; and if the custom followed in colleges be a criterion, it is not, by itself alone, an altogether good method. However, in so far as it is considered the best for our midshipmen, it but emphasizes the more the necessity of having the most approved text-books, and the most skillful men to use them.

The ideal way, perhaps, to instruct midshipmen would be, I venture to suggest, to combine lecture and text-book, and to compel attention to both by requiring a certain amount of individual work in the library, as well as an accurate recitation in the section room. Thus teacher and pupil would be brought into closer contact and a better understanding of the subject-matter be arrived at; the mind and the memory would work together; interest would be stimulated, and knowledge would be drunk in. Such a desirable condition presupposes a thoroughly capable, enthusiastic instructional force, easy and convenient access to a good library, and the study of a masterly text-book.

THE BOARD OF VISITORS.

"Prove all things; hold fast that which is good."
—*Thessalonians.*

In order that the operation and work of the Naval Academy may be known and taken cognizance of by the government at Washington, an Act of Congress was passed long ago, providing

for a Board of Visitors to meet at Annapolis each year at the close of the academic term, to witness and take part in the graduation ceremonies, and to make a report on the grounds, discipline and curriculum of the Academy, to be laid before Congress and the Washington authorities for their information and guidance. This board is composed of twelve members: two of them are senators selected by the President of the Senate, three are representatives chosen by the Speaker of the House, and seven are from the country at large and are appointed by the President of the United States.

To the seven members of the Board of Visitors appointed by the President I wish to call attention. These gentlemen are at present selectd, so far as I know, without any particular consideration of their qualifications as educators, or as men sincerely interested in promoting the welfare of the naval service as exemplified in the work being done at the Academy. I venture to think that better results would follow if the law were so amended as to state specifically that these Presidential appointees must be chosen as follows: one member shall be a representative of the high schools or fitting-schools, public or private, of the country; one shall be the head or president of a college or university; one shall be a professor in some college; one shall be an army officer on duty at West Point; one shall be a Naval Academy alumnus in civil life; one shall be a naval officer who has never since graduation been on duty at the Academy; and one shall be a naval officer who has at some time in the past been on duty at Annapolis.

As thus constituted the board nominated by the President would be composed of three civilian educators of experience, one army officer from an institution in which the aim and object are similar to those at Annapolis, and three Naval Academy graduates. The idea in suggesting a board made up as above indicated has been that in this way there would be brought to the consideration of affairs at the Academy men competent to speak authoritatively on matters educational, disciplinary and military; for these are the three elements which, according as they are attended to, make for the efficiency, or inefficiency, of the Academy as a school in which to train young men to become naval officers.

The work such a board of visitors would have to do would be hard and would require from each member much patient investigation and study. For in the arrangement of the work and the

method of procedure, it is contemplated to divide the whole board into several sub-boards or committees, to each one of which would be assigned the particular task of preparing reports and making recommendations of certain specified academic activities. These reports would be laid before the committee of the whole to be discussed, amended and approved; and the final report emanating from the board as a whole, would be laid before the Congress and the authorities.

The Board of Visitors does at present resolve itself into several committees, each committee detailed to inquire into the different matters of curriculum, admission, discipline, etc.; but I venture the opinion that not much serious investigation can be made of these important affairs, no matter what may be the personality or earnest purpose of the members, during the short time the board is engaged in its labors. Ten days before graduation day the board arrives at the Academy and is greeted with trumpets and shalms. Some members are always late and miss this imposing function. Next the board gets settled in quarters, organizes and appoints committees, which in turn must also organize and block out a plan of procedure. Then the work of investigation, or perhaps I should say examination, is begun. It is pursued while the committees are watching drills so conducted as to bring into prominence the skill of the midshipmen in performing the practical work of the soldier and the sailor, and while the members are enjoying the social festivities arranged in their honor. So the time passes quickly and agreeably; the day of graduation comes and goes; and the board disperses. Not a moment has the Academy been running along its customary normal lines; instead there has been given an interesting performance for the special benefit of the board. Therefore, in order to obtain information about the inner workings of the institution, the committees have had to depend largely on *ex parte* statements and not on information obtained at first hand. Hence by so much is the weight of the recommendations of the board diminished.

It might be more to the purpose if the Board of Visitors could be assembled at Annapolis at least a week before the final examinations began, while the ordinary routine was in force and before the whole institution was given over to "showing off." Then the several committees could pry into the nooks and corners and discover, in some measure, those things about which they must

otherwise remain ignorant. For instance, the committee on scholastic matters could investigate the method of instruction, scrutinize the syllabi of the courses, scan the text-books, question the instructors, and interview some of the clever undergraduates. The committee on discipline could probe the subject of crimes and misdemeanors, find out what impels officers to report midshipmen and the effect such reports have on the recipients, and learn the meaning and value of *esprit de corps*, and so on, each committee doing its best to determine what to recommend to raise the Academy up to the highest pitch of perfection.

To enhance the worth of these recommendations and accentuate the importance of the conclusions reached, it is suggested that the board might be so constituted that not more than one-third of its members would be new members in any year. Such an arrangement ought to promote efficiency; for the members, becoming interested in watching the carrying out of what they recommended and feeling responsible for the results, would delve deep into the matters entrusted to them and submit reports thereon drawn up with care and circumspection.

These reports might be sent out into the service for the navy to discuss. And it might not be a bad idea, if for no other reason than to excite the interest of officers in the affairs of their Alma Mater, to call for comments and suggestions to be submitted to the board at its subsequent annual meeting. Also these annual reports might be mailed to the members of the Board of Twelve (if there should ever happen to be such a board) who framed the course of instruction, and their advice requested as to matters educational. By adopting some such scheme, it seems to me that criticisms of a useful nature might be laid before the board to assist the members in their deliberations and enable them to make such additional recommendations as would have for their end the removal of the reproach that Annapolis has little opportunity for getting in touch with the latest and most advanced principles of modern education, and of measuring itself by means of comparison with other educational institutions.

OUR COAT-OF-ARMS.

"Our new heraldry is hands, not hearts."

—*Othello.*

In venturing to suggest that composite boards, that is, boards composed of both naval and civilian members, could better decide

on educational needs and methods than boards composed exclusively of naval officers, there is no wish to belittle the zealous and conscientious endeavor naval officers would bring to the consideration of scholastic and other like matters; for naval officers are clever and are hard workers, and willingly attempt to perform to their utmost ability whatever task may be assigned them. But from the nature of their environment, and the lives they lead, they cannot be expected to be trained educators or to be conversant with modern educational progress and methods. And further, whether because of the activities pertaining to a life on the ocean wave, or because "of all the liberal professions it is the least studious," naval officers as a whole take no special interest in matters affecting their Alma Mater.

However, naval officers have sufficient intellectual capacity to comprehend what goes on at Annapolis, and sufficient experience to enable them to perceive what may be desirable, and what may be undesirable, in the training of young men who are to come into the service. Therefore, having the interest of the service and the good of the nation at heart, it becomes in truth a part of the duty of every graduate to take cognizance of what the Naval Academy is doing, for on the *esprit de corps* there inculcated, and on the ideas of service there imbibed, the navy must rely for the performance of duty and the maintenance of its traditions and high standards.

Nevertheless, not only are we not minded to concern ourselves with the advancement of our Alma Mater, but we have not that affection for her which college men have for the colleges that give them their diplomas; and we do not seek to gain for her that recognition to which she is justly entitled. Our Alma Mater, despite her short-comings, is a great government school, maintained for the highest and noblest of purposes, that of educating young men to be American naval officers; we therefore have no right as her sons to remain oblivious of her movements, or be reluctant to help uplift her so that she shall stand before the world conspicuous for her good works.

The story of the seal or coat-of-arms of the Naval Academy throws an illuminating light on the want of spirit, interest and gratitude I have complained of. I quote it from Park Benjamin's book, "The United States Naval Academy," as follows:

> The seal or coat-of-arms of the Naval Academy has for its crest a

hand grasping a trident, below which is a shield bearing an ancient galley coming into action, bows on, and below that an open book, indicative of education, and finally bears the motto, "Ex Scientia Tridens" ("From knowledge, the sea power"). The whole is the design of the author and was adopted by the Navy Department in 1898. Up to that year, the Naval Academy had possessed no authorized device. . . . . The occasion which led to the adoption of the present design was the building of a new club-house by the University Club of New York, on the exterior of which the coats-of-arms of the several colleges were placed as an embellishment, and this brought the fact to general notice that the Naval Academy had no badge of the kind. The matter was at once taken up by Mr. Jacob W. Miller, of the class of 1867, and mainly through his endeavors the desired approval of the Navy Department was secured.

Think of it! For over 50 years our Alma Mater possessed no device! Finally, one man, single-handed, an alumnus who had resigned from the navy years ago, had his own ideas embodied in the design we are now familiar with; and another alumnus, also a civilian, had this coat-of-arms adopted. Yet during all this long time there had been hundreds of officers in the service, not a soul of whom, so far as I have heard, ever lent a hand in any way to design or have accepted an armorial symbol to indicate his Alma Mater. It comes with an ill grace, therefore, to criticise this escutcheon, emblazoned with the galley and the book, which these two energetic graduates succeeded in having accepted as the distinguishing emblem of our college. However, some iconoclastic person has suggested that the galley was selected because it was a vessel manned by slaves chained to the oars. And of the book some cynic has said that 2.5 should be imposed on one page and a mathematical symbol on the other.

Perhaps, since we as midshipmen take an oath to support the Constitution of the United States, a figure representing that old flash frigate of song and story, the U. S. Ship *Constitution*, might, when looked at, inspire loftier sentiments in our young breasts, and convey to the minds of all beholders a deeper meaning than can be found in the effigy of the ancient galley coming into action bows on. The open book, however, is symbolical of one of the purposes of the Academy, and may, therefore, be fairly entitled to its place, though the suggestion has been offered that it might be omitted or replaced by some other symbol.

Now as to our motto, "Ex Scientia Tridens," "From knowledge, the sea power." It would be interesting to know how many entering youngsters could translate this Latin into English, and it

would be still more interesting to know how they would interpret the significance of the translation. Supposing they could grasp the idea that sea power is the offspring of knowledge, would the conception give birth to that greater idea, allegiance to country? Contrast this motto " Ex Scientia Tridens " with the motto of the seal of Harvard College, " Christo et Ecclesiæ," which means, writes Lowell, that " we are to devote ourselves to the highest conception we have of Truth and to the preaching of it." Or better still, with the motto enscrolled about the shield of West Point, where around an escutcheon, emblematic of the flag of the United States, emblazoned with a helmet of Mars, fesse, are found the English words " Duty, Honor, Country." Very simple words these! They require no explanation or translation; yet withal they are very comprehensive.

Many years ago, before the founding of the Naval Academy, an officer of the United States Navy, Stephen Decatur, gave as a toast at a dinner this sentiment: " Our country! . . . . may she always be in the right, but our country! right or wrong." Concerning this sentiment, a distinguished English statesman (Lord Beaconsfield, I think) wrote as follows: " It has remained through all ages for a representative of the youngest of powers to formulate the vividest description of patriotism. It was an American who proposed the toast: ' Our country! right or wrong!' . . . . That phrase carries all there is of patriotism. It means that the flag which shelters must receive the benefit of every doubt in the minds of its adherents. Without that spirit no nation can long survive the perils and the rude shocks of this predatory world."

" Our country! right or wrong! " What a pity it is these words cannot be substituted for " Ex Scientia Tridens."

However, perhaps Mr. Benjamin has correctly interpreted the spirit overshadowing our Alma Mater, and has given voice also to the views held by the service at large. None the less, the faith we should have in our foster mother would, I venture to think, be greater and more abiding were our coat-of-arms one of hearts rather than hands, and our motto one to inspire patriotic rather than practical sentiments. We would perhaps be more appreciative of the mighty force our college can exert in shaping our destiny, and in consequence give a greater meed of praise and a larger sum of love to her whom we should feel proud to call our Alma Mater.

ALMA MATER.

"Is the college where you first knew the dreams of fancy and joys of thought only boards or brick and mortar?"—*Emerson.*

Alma Mater—fostering mother! I know of no institution in the world to which this term of endearment is so peculiarly applicable as to the United States Naval Academy. On the other hand I know of no institution where the deep significance of this affectionate expression is so little comprehended and where the words of tenderness are so seldom heard, as at this same Naval Academy. Graduates of other schools will tell you of

> "Bright college years with pleasure rife,
> The shortest, happiest years of life";

but no one ever heard a midshipman sing this, or for that matter an officer who may be the father of a midshipman. Young and old alike, we have little fondness for that lovely spot on the Severn, slight respect for what we learned there, scant reverence for the spirit of the place, and this, notwithstanding the incontrovertible fact that we were nurtured and trained by our Alma Mater with a care and solicitude incomparably greater than can be found in any other college in the land.

When still young enough to be impressionable, a boy enters the Naval Academy and is at once told and made to feel that the trials and hardships of life are just beginning. All hands stand ready and willing to jump on him. There is no effort made to let him down easily, and none to comfort and help the weak-hearted. He must "hit the line hard," and if he goes under, so much the worse for him, for there are no kind friends to raise up those who fall. Finally, after four years of unceasing struggle with lessons and rules and regulations, he is given, as the reward for this duty well done, his diploma. But he does not kiss the hand that bestows this honor. All that he owes to his Alma Mater—his education, his subsistence, his pay, his very life so long as he lives—has never come within his purview amidst surroundings which he has found unpleasant and uncongenial, and where nearly every hand—so it has seemed to him—has been raised against him. Therefore, when he hastily dons his citizen's clothes to go out through the gates that lead to the world, away from the protecting arms of that foster mother who has for four long years been such a tender nurse to him, he has but one prayer on his lips, "Thank God I'm

through"; and but one wish in his heart, "I hope I'll never see this cursed place again."

"To a very great many," wrote an ensign some years ago, "the great reason for the unpleasant remembrances they have of the Academy is the feeling of resentment to injustice; and until the cause is removed, the feeling is bound to remain." The cause is the antagonism, real or fancied, which exists between officer and midshipman. The officer is accused by the midshipman, rightly or wrongly, of partiality, of favoritism, of hardness of heart, and of contempt. There is in the air the feeling that between preceptor and pupil there can be no sympathy, no cordial understanding, no friendship, no harmony.

Intimately associated with the idea that "our rulers are conceived as in a necessarily antagonistic position to the people over whom they rule," is the further antagonistic conception that sea power, as a midshipman grasps the term, can result from the kind of knowledge compulsorily acquired at the Academy, where knowledge means—at least to him—an uncommon amount of unnecessarily difficult science, more or less mathematical, which he has been forced to pretend to swallow and digest. And although he may be delighted to receive his diploma informing all men by these presents that he has, under that banner with the strange device, "Ex Scientia Tridens," won a fight, he is not conscious of any uplifting of himself in consequence. He may be pleased to think that he knows a little something of steam and mathematics, and has a smattering of one or two other things professional; but of patriotism and of that inspiration which impels a man to do all that may become a man, he has not much apprehension. These last, however, are the qualities that are of the essence of sea power; and therefore these are the elements of which the air we breathe while we are in the arms of our Alma Mater ought to be composed.

Late in life, after we have been down to the sea in ships, and done business in great waters, we may, as we pace our lonely beat, sometimes look back to the days of our youth at Annapolis, and the thought may come to us that perhaps we might have been made into better men had our Alma Mater seen things as we now see them, had she taken more account of our youth, of our failings, of our aspirations. But the thought stirs us not to action, it is only an idle dream "'neath the silent stars." It soon passes, and

we continue on our way saying nothing, doing nothing, caring nothing.

There is no need to repeat again the reasons for this state of mind; the changes have been rung on them *ad nauseam* all through this paper; and besides, the time has come for piping down. "Can there any good thing come out of Nazareth?" Aye, good things a plenty! And now that the ungracious task of calling attention to some of the less commendable features of Naval Academy life has been completed, let us take thought of some of these good things as they appeared to a young naval officer some years ago. "Annapolis," said he, "makes of us men; men noble and true, men fearless and bold, men of integrity and honor, men to command and obey, officers and gentlemen. Ought the petty annoyances of school life, the reports of delinquencies, the incivilities of some instructors, yes, even the rare, unjust accusation of dishonor made by some prejudiced senior—ought incidents like these so to dwarf our understanding, so to cloud our intelligence that nothing shall remain but a sense of injustice and imagined injury? Is it more difficult and unpleasant to remember merry times? Can we not without effort call to mind the fun we had, the jokes we passed, the pranks we played? Can we not also think, with a sense of deep gratitude, of the friendships engendered by our intimate association with one another, of the dear men we learned to know and to love Fellows, what a glorious title page! what a splendid preface! what a superb first chapter in the book of our career, were our four years at Annapolis! Four years in which were toil and trouble. Four years full of enjoyment and delight. For the bitter was little and the sweet much. From the bottom of my soul I pity that man whose heart is so hard, whose mind is so contracted, whose conception is so small, that he forgets to whom he owes his position, his education, his all. 'The motions of his spirit are dull as night, and his affections dark as Erebus.'"

I shall close this paper with a final quotation, taken this time from the writings of a commander in the navy, who, after admitting and seeking to account for "the undeniable fact that among graduates of the Naval Academy there does not exist that general feeling of love and respect for their Alma Mater that appears to be evinced by civilians who are college graduates," concludes as follows:

Whatever may be the reasons assigned for this lack of affection referred

to, we are sure that they are unworthy the attention of reasonable men, and that they should not produce the effect which they appear to do. Every graduate should have the interest of the Academy at heart, should rejoice in all measures taken to elevate its standard, and should feel a brotherly interest in all who have been the recipients of its diplomas. Gratitude to the government which has given them an honorable position in the world should be a more active feeling than it is; and every graduate should be able to say:

"Oh, Alma Mater! mother dear!
With all thy faults, I love thee still."

WAR ON THE SEA.—Continued.

CHAPTER VIII.

GENERAL POLICY OF NATIONS; ITS CLOSE CONNECTION WITH STRATEGY. APPLICATION TO THE FRENCH NAVY: HEREDITARY ADVERSARIES; ENGLISH POLICY; GERMAN POLICY; NEW NATIONS.

It is chiefly in taking up this chapter that I feel all the difficulties of my task. In the short space at my disposal, I ought to pass in review all the elements which make up the foreign policy of a great nation, to show how it acts as the motive and regulator of strategy. This magnificent study, too vast for our limited program, would moreover exceed my ability. And yet it is indispensable for me to show, were it only in a brief statement, the intimate connection which makes military conceptions the natural consequence of political conceptions. There is no study of strategy possible without that. It has become a common saying that: "*A nation must have the fleet which corresponds to its policy.*" To understand the full value of this expression, it suffices to imagine the two extreme possible conclusions of the policy of a given nation: conflict with England or with the Swiss Confederation. And at once it is clearly apparent, not only that the conduct of the war evidently cannot be the same in the one as in the other case, but furthermore that, between these two limiting cases of an exclusively naval power and another with land forces only, there exists an infinity of mixed solutions in which the relative value of the naval force is more or less great in comparison with the total military force.

The point of departure being thus clearly defined, it results therefrom that the future conduct of the operations of war, depending necessarily upon the composition of the adversary's forces, demands prior knowledge of the political objectives. There is no possible strategy, using the expression in its broadest sense, that is in its relation with preparation for war during peace times as well as in its connection with the direction given to actual operations, unless at the very beginning the probable adversary or adversaries are known. Even more, it is usually from the prior

political action that military strategy derives its fundamental premises, knowledge of the enemy, of his weak points as well as of the resources at his disposal, of his moral state as well as of his material situation; in short all the information the utilization of which is the most valuable element in success. Finally, it is through politics *alone* that the military art can emerge from pure abstraction, wholly speculative, to solve concrete cases; it is politics which makes it fruitful.

The very foundations of the military structure rest then upon the precise designation of the nations with which causes of conflict are permanent or even liable to occur. And it is because the study of strategy would be absolutely sterile without this essential datum that I have undertaken to write this chapter.

I scarcely need to observe that I have no means of knowing the government's ideas. The following ideas, therefore, should be taken only as the statement of my personal views. For that very reason, doubtless, they will lose much of their influence, but still they will not have been useless if, even taken as mere hypotheses, they serve to indicate the method. Truly also I would have hesitated to express my full thought if at home or abroad anyone could be led to see in it the reflection of that which inspires and directs, in a practical way, French politics.

THE BRITISH POLICY.

As soon as the problem is set to ascertain in what possible conflicts our country can find itself involved, our thought inevitably turns towards England, not only from sentimental suggestion, under the influence of the acute memory of past defeats, but especially from intuition of the aggressive maritime rôle which her privileged insular position, as well as her immemorial policy, assign to that nation in respect to all other aspirants to economic power.

Doubtless for us seamen, and especially for the populations of the Channel coast, at Dunkirk, Calais, Boulogne, etc., who have preserved so vividly, after the lapse of more than two centuries, the hated memory of the invader, the English represent always the hereditary enemy; but in our utilitarian epoch these traditions would not be enough to justify counsels of military preparation against Great Britain, if motives of a more urgent nature did not compel us to face war with her as an eventuality never to be overlooked.

At the very moment when, on both sides of the Channel, people seem to be celebrating with equal enthusiasm the benefits of the *entente cordiale,* hailed as the symbol of an indestructible peace between two nations formerly irreconcilable, my words appear a rude interruption of the general rejoicing.

"*Embrassons nous, Folleville.*" So let it be, provided it be on the condition that we forget nothing of the past; I do not mean the resentments unworthy of a great nation conscious of its strength and master of its destinies, but the lessons which that past contains, as well as the warnings which it gives us against the menace of the future.

The attentive study of that past is in fact singularly suggestive, and marvelously illumines the motives of British policy. Finding there the evidence of many other *ententes cordiales,* we are naturally led to accord to the one of 1905 the exact value which it ought to have, that of an accidental agreement which will last, like the preceding ones, as long as the economic development of France does not give offence to her powerful neighbor.

It is well to observe first of all that geographic conditions have fixed the destinies of England. Her dwelling on an island of harsh climate predestined her people to hardy enterprises, to continuous maritime expansion. What her first inhabitants were led to do, at first by the necessity of going to seek afar off the essential objects which they lacked, then to engage in barter, and even to secure the wood necessary for the construction of their ships, their successors continued to do, to increase the wealth of their country and finally to sustain their traditions of conquest.

The first manifestations of a policy which still endures in our day, after having proved by a long continuity of effort the maritime and commercial genius of England, go back to the reign of Elizabeth.

The enjoyment of a long peace allowed English commerce to take an unexpected development. Thanks to an activity unknown till then, their enterprises were each day extended further, until they reached the borders of the new world, whither they were drawn by legendary stories of unimaginable riches. In this new field a prior occupant had seated himself, and a rivalry, daughter of the ancient quarrel of Rome and Carthage, was fatally to arise between the fortunate possessor and the new comer with long teeth.

THE DOWNFALL OF SPAIN.

This first phase of England's long struggle for the conquest of maritime empire had for objective the destruction of the till then uncontested naval supremacy of Spain. That nation, then the first in Europe, assumed to forbid English commerce to take its share of the incalculable riches with which she herself loaded her galleons. The rights which she invoked to support her claim to this monopoly were weak indeed, unless supported by the most powerful of all; that which might gives. What truly could a solemn Bull of the Pope count in the eyes of a bold and enterprising people, having the blood of the Normans, and already conscious of its vocation as well as of its strength? It was necessary, as in the time of the Punic wars, that one of the two maritime powers should make way for the other, since the world was not vast enough to satisfy them both.

Such is in fact the true origin of a conflict that ended in the effacement of the first great maritime power which the world-wide British expansion met in its path. Spain's pretension to preserve her monopoly was only the outward pretext of this struggle.

A great seaman, Drake, was the instrument of England's policy, as Nelson was likewise to be two centuries later. Drake captured San Domingo and ravaged the coasts of Spain, notably Cadiz as well as Carthagena, which he reduced. Philip II armed the Invincible Armada, in 1588, to avenge these depredations, and especially to crush this young and very pushing rival. The Spanish fleet had superiority of numbers, but only the appearance of strength. Dispersed by a storm in the Channel, after an indecisive naval battle off Gravelines, it disappeared as a naval force, and with it was likewise wrecked Spain's maritime supremacy. It is from this period, on the contrary, that the ever growing power of England dates its awakening. And this date is the more interesting to observe because it marks the birth of a new method of naval war which the English nation will so well succeed in appropriating and making profitable that to it she will owe the secret of her unexampled prosperity.

To the great Armada, the English fleet could oppose only approximately equal forces in respect to numbers of men and ships; perhaps the Spanish ships might even be thought the stronger. But the preparation was far from being equal on the two sides; the Spanish vessels were less well armed; and, finally and more

important than anything else, the better trained English crews were greatly the superior. In short, the moral forces of every nature were the greater on the English side, and, as always, they inclined the balance of fortune.

We already have a clear grasp on the idea of the primary importance of preparation for war. The intoxication of riches acquired without reckoning, the indolence which comes from their too long enjoyment, the careless peace of mind derived from a monopoly so long uncontested, had made Spain forget that a formidable force alone is capable of restraining dangerous desires.

Until the last years of Elizabeth's reign, in spite of the battle of Gravelines and the attempt of the Armada, the character of the English-Spanish hostilities was rather that of a war of commerce-destroying than that of a war of great military masses. It is particularly after her death and under Raleigh's energetic impulsion, that England, conscious of her strength, was to adopt definitely, for the triumph of her naval policy, the true military plan. It is by his words, as well as by his pen and his deeds, that Raleigh preaches the new doctrine. I take from Seeley[1] a characteristic passage of one of Raleigh's letters: "*Yea in eighty eight, when he made his great and fearful fleet, if the queen would have hearkened to reason, we had burnt all his ships and preparations in his own ports as we did afterwards upon the same intelligence and doubt in Cadiz. He that knows him not, fears him, but excepting his Low Country army, which hath been continued and disciplined since Charles V's time, he is nowhere strong.*"

As may be seen, it is no longer a question of merely falling upon Spanish commerce and capturing a few ships, assuming the restricted rôle of pirate; ambition has a higher aim, nothing less than to destroy the world-wide power of the King of Spain and to put England in his place.

Raleigh expresses himself on this subject with perfect clearness: "*If the late queen would have believed her men of war, as she did her scribes, we had in her time beaten that great empire in pieces and made their kings kings of figs and oranges, as in old times.*"

These lines of Raleigh also contain a whole system of strategy, which thenceforth for centuries will be that of the English navy. This strategy, very far from scattering efforts upon enterprises of

[1] The Growth of British Policy, by Sir J. R. Seeley.

small scope, such as attacks upon commerce or upon territorial possessions necessarily are, will take as principal objective the destruction of the enemy's naval force, thus realizing at one stroke the aim of the war.

It is right to recall that Drake had had the same prophetic views, but, less fortunate than Raleigh, he had not the satisfaction of making them triumph, because held back by the queen's desire for peace. As early as the time when the Armada was being prepared, he wrote: "*Her Majesty and people are not to fear any invasion in her own country, but to seek God's enemies and her Majesty's where they may be found, ... for with fifty sail of shipping we shall do more good upon their own coast, than a great many more will do here at home . . . . .These vast preparations of the Spaniard may be speedily prevented, as much as in your Majesty lieth, by sending your forces to encounter them somewhat far off, and more near their own coast, which will be the better cheap for your Majesty and people and much the dearer for the enemy.*"

Observe in passing the remarkable agreement in opinion of the best among the English seamen of the time in favor of the offensive. By the employment of this offensive an English squadron under Raleigh's orders in 1596 destroyed an important Spanish fleet in Cadiz and burned the city. These considerations lay bare for us the intimate relation which exists between the general policy of a great nation and the military combinations whose object it is to make that policy triumph.

We shall find new evidence of this in the course of history. The end of the 16th century and the beginning of the 17th mark the decline of Spain's maritime power. There will be a few more attempts on her part to reconquer the empire of the world, but they will be fruitless, and this nation, formerly so prosperous, will never more be able to disturb the new Empress of the seas.

RIVALRY WITH HOLLAND.

But this period witnessed also the birth, as it were, and the growing up of a new maritime power, the rapid and formidable expansion of which was again to awaken England's jealous attention. The Dutch had also entered upon the path of commercial maritime development and had grown rich upon the spoils of Spain. Everything urged them to this course; the unfruitfulness

of their land, its harsh climate and its geographic configuration. They feel themselves drawn to a seafaring life and succeed in it so well that they take the lead in the economic movement. Well before England, they found colonies in the New World, create all at once a powerful commercial fleet which furrows the seas, transporting the products of exchange, even for the account of Spaniards in the time of their splendor, and justify finally the title "Ocean Tramps" which has been given them.

The 17th century was to be made notable by the inevitable conflict of the "sea powers"; for, vast as was the ocean's extent, it was not large enough to permit two nations having the same desires to expand upon it side by side. The first attack made upon the commercial prosperity of Holland was Cromwell's famous Navigation Act, in 1651. By reserving for the future to the British flag alone the monopoly of the transport of English products and merchandise, he seriously disturbed the Dutch in their own monopoly, which, though based upon old custom and the existing situation, was none the less powerful from the importance of its apparatus. It is not surprising, therefore, that in the following year they came to blows; but it is particularly curious to note that, hardly a few months before the promulgation of the "Navigation Act," the two naval powers had drawn up a plan of union, which came to nothing, but which suffices to show that agreements between nations are very precarious, if they are not based upon great social interests. In reality, this manifestation of hostility only emphasized the smothered rivalry existing from the beginning of the century between England and Holland.

War was therefore inevitable, and it was conducted by the English sailors with that spirit of decision which has persisted with them as the characteristic trait of their offensive method. By throwing himself upon a flotilla of fishermen, and capturing or destroying the Dutch war ships which guarded them, Blake showed himself the worthy heir of Drake and Raleigh, and the recognized precursor of Nelson; the English navy possessed from that moment the true doctrine of war, represented by energetic and resolute attack. In this conflict, the naval war forces were sensibly equal in nominal value; but, under the all powerful influence of the great Oliver, that of England had benefited by the military and combative spirit which the Protector had inspired in his people. The British navy was therefore to triumph in this struggle,

in spite of temporary set backs due to the exceptional worth of Dutch seamen like Ruyter and Tromp. Furthermore, this struggle was ruinous for the Dutch. That nation of traders, accustomed to have everything, even to the most essential supplies, brought from abroad, suffered incalculable damages from the obstacles to the free movements of her supply ships caused by the state of war. Finally, by the very nature of her political constitution, she was little prepared to adopt the sole measures capable of assuring to her the integrity of her economic power.

A coalition of identical general interests rather than a national unity, the government of the Low-Countries could with difficulty understand that the preparation of a powerful war fleet was not an unnecessary expenditure, abstracted from commercial wealth. They haggled over the expenses of arming and getting ready ships of war, and deserved Ruyter's threat to take the sea no more if the number as well as the strength of his ships was not increased.

Such doings are common to all periods, and that is why they should be remembered. Very few people, even in our times, are capable of assimilating this fundamental idea; that only the powerful are respected and can enjoy their possessions in peace; that, consequently, it is indispensable to be strong. But, to be strong, it is necessary to know how to expend properly the premium of insurance against the risks of war, and that premium is nothing else but good preparation; it is a wise economy. Very small would have been the expense of construction and maintenance, for Spain first, then for Holland, of fleets of sufficient strength to intimidate England and cut off at their roots her aggressive inclinations, when compared with the immense losses sustained by those two nations in their loss of maritime supremacy.

In her duel to the death with England, Holland was therefore to succumb. If this result was not completely secured in the first war, she was already struck to the heart; if, in the second war, her admirals won the naval Battle of the Four Days, that isolated success was but the last desperate effort before the final overthrow. The Dutch marine, struck in its vital parts, thenceforth declined, and retained a few traces of its ancient prosperity only on condition of following thereafter in the track of its all-powerful rival.

The 16th century, then the 17th, were two successive stages in the continuous enhancement of the maritime power of England, characterized, the first by the weakening of Spain, the second by

the defeat of Holland. With the end of the 17th century and the 18th century, the turn of another nation, France, was to come.

THE CONTEST WITH FRANCE.

We meet the first "*entente cordiale*" in 1657, under the form of a veritable offensive and defensive alliance between England and France. It had, however, but a brief existence, since less than thirty-five years later the two allied navies fought, first at Beachy Head and then at La Hogue. If that period, very short as it is in the life of peoples, sufficed to transform so radically the relations of the two nations, it is because their respective situations were considerably changed in the interval. At the time of the agreement arranged between Cromwell and Mazarin, France, as a naval power, had no existence; scarcely emerged from that terrible internal crisis, the war of the Fronde, still struggling with a war against Spain, she was sufficiently occupied besides with the work of recuperation not to be able to give offence to the Protector.

To England, on the other hand, it was above all important to give the coup de grâce to Spain, already very enfeebled, and to dominate Holland with equal completeness. But a few years later conditions were no longer the same.

With the effective accession to power of Louis XIV, there at once opened for France an era of extraordinary grandeur, of power and of conquests whose radiance could but awaken the jealousies of England.

The whole policy of the Grand Monarch consists in fact of a persistent effort to absorb to his own profit, at first by force and later by alliances, the King of Spain's heritage of glory and power. And from the first manifestation of this ambition, two contingencies are of a nature to alarm England most particularly.

The heritage of Spain includes, in fact, the Spanish Low-Countries, that is Antwerp; and the mere idea that that port, which has been one of the busiest in the whole world, which is destined by its favored situation still to play a great part in the economic warfare, can fall into the hands of an enterprising and expanding nation, is quite insupportable to the British people. This is not all; the heritage of Spain contains still other crumbs of past grandeur and of real absolute dominion over the seas. Who could affirm that the heir, full of spirit and ardor, will not claim all the

fruits of his conquest and will not wish to take up for his own account the ancient commercial splendor of Spain?

There are more motives than would be necessary to make England feel her paramount maritime power to be seriously threatened. She has the more right to be anxious because the patient and methodic labor of Colbert has supplied his king with wonderful instruments for carrying out his policy; a powerful naval force and maritime institutions which favor economic expansion. Henceforth, France will be the enemy!

Under the reign of Charles II, so obstinately favorable to the maintenance of good relations with Louis XIV, the dawning development of the French navy began to excite the English suspicions; that monarch himself expressed them in a letter to the King of France, quoted by Mahan: "*There are two impediments to a perfect understanding. The first is the great effort that France is now making to create a commerce and become a powerful maritime empire. This is so greatly suspicious to us, who are only important through our commerce and our naval forces, that every step that France takes in that direction will perpetuate the jealousy between the two nations.*"

There may be seen laid bare the heart of England's political doctrine, and when it is considered that this was thus proclaimed with such clearness hardly a few years after the understanding of 1657, it may be understood exactly what degree of vitality must be accorded to a reconciliation born of transitory conditions and as ephemeral as they.

To make front against this new storm that was brewing England formed the Triple Alliance. In joining herself to the United Provinces, she appeared to forget old grudges in order to ward off a more pressing danger; but in reality she pursued a double object, since Holland, already weakened, would find herself the more directly exposed to the blows of France, and, by serving as a sort of shield to her ally, would withdraw from the struggle still more enfeebled. The correctness of the views of the English policy was demonstrated by the events of 1672, the fall of de Witt's government and the almost complete ruin of the United Provinces.

But it was above all under the reign of William of Orange, who, by uniting upon his head the two crowns of the Low-Countries and England, sealed the close union of interests of the two countries, that the opposition to the aggrandizement of France took its

most energetic and decisive form. The disaster of La Hogue, inflicted on the French fleet under Tourville, was the result of this opposition.

The consequences of this naval defeat were considerable, for it was the beginning of a period of almost complete eclipse of the French navy. And yet never perhaps would a powerful and formidable fleet have been more necessary to France, to sustain the long and important war of the Spanish Succession, which was to begin very soon and to open anew the question of maritime supremacy. A page of Seeley admirably expounds the philosophy of this important struggle.

"William's work has hitherto consisted in raising the British state to a position in the world similar to that which had been hitherto occupied by Spain. He unites the two maritime Powers which on the sea and in the New World are the successors of Spain. The British Trade Empire which now begins to take shape can only flourish at the expense of Spain. The maritime sceptre is about to pass from Spain and seems likely to pass to Britain. The question of the Spanish Succession is thus twofold; it is the question not only who shall be Spanish King on the death of Charles II, but also who shall succeed to the ancient maritime and colonial monopoly of Spain.

"France will put in her claim to the latter succession as well as to the former. For France too has experienced that singular transformation which marks in England, as we have seen, the age of the second Revolution. French politics too have been passing into the commercial phase. It could not be otherwise since the position of France and her relation to the Spanish monopoly was very similar to that of England. If England was insular and oceanic, France too has a long sea-board, facing at once the Northern Seas, the Atlantic and the Mediterranean. She has flourished hitherto upon the spoils of Spain, why should she not acquire the most precious of all Spain's treasures, her colonial monopoly? She is prepared to do so, for of all the many developments of French activity in that age, in which she was so active, perhaps the most remarkable was that to which Colbert gives his name. With him she had entered into commercial and maritime policy, and before the battle of La Hogue she had ranked as the first maritime Power."

These lines contain the substance of the causes of the permanent

hostility of England towards France. This memorable war definitely opens a period of almost continual conflicts between the two nations, a period which covers the 18th century and only ends in 1815, with the final crushing of France's pretensions to maritime supremacy. All these conflicts were really the effects of a single cause: the opposition of Great Britain to the economic, commercial and colonial development of her rival. The war of the Spanish Succession is also notable for an occurrence of the utmost interest for us. I refer to the capture of Gibraltar and Port Mahon by England. This event is of capital importance, for it inaugurated the system which that nation will thenceforth apply with remarkable logic, and by which she will assure to herself the strategic bases indispensable to the maintenance of her maritime monopoly. In proportion as this dominion takes on greater proportions and extends its immense net over all the seas of the world its security will require points of re-enforcement where the meshes of this net will find themselves strengthened; and it is thus that little by little the English policy will sow over the whole face of the earth the bases of operations and advanced bases which, at least as much as her squadrons, and because without them those squadrons would have but a precarious strength, will be the principal elements of the British power.

I have said *English Policy*, for it is truly only to the directing power of a great nation that can be attributed the comprehensive views, the breadth of far sighted plans, the patient continuity of effort, which have brought about this methodical grouping of stations, always chosen at suitable points, by which the English government has secured maritime supremacy. No example shows better than this one that the very foundations of military strategy rest upon politics.

The year 1717 brings about, between France and England, a new friendly understanding the memory of which is surely one of the most humiliating in our history. It was the outcome, in fact, of a haughty and despotic domination on the part of our ancient enemies, and of a base subserviency of the hateful policy of the regent and Cardinal Dubois.

The most substantial guarantee of the solidity of the understanding was the intentional weakness of our navy; no longer strong, we were no longer to be feared, and England could give us the alms of disdainful friendship. Moreover, wishing to do the

most urgent thing first, she was above all anxious to crush in its incipiency the attempt at building up again the Spanish power under Alberoni's energetic impulse. And after this result had been attained, thanks to the blindness of the government of France, there was no navy left strong enough to oppose the overwhelming naval strength of Great Britain. We find this statement in the celebrated Mémoires of Saint-Simon: "*There is no counter weight to the naval power of England, whose ships cover every sea. Holland, while inwardly lamenting it, dares not show her feelings. Spain will not be able for a long time to recover from the fatal assistance that we have lent to England in ruining her navy and crippling her commerce and her establishments in the Indies; and France would need thirty years of peace, and of the wisest government, to bring her navy back to the point where Colbert and Seignelay left it.*"

It is important to find from this eminent writer and diplomat the affirmation of the need of a powerful navy.

The new understanding was also to be a very insecure one. since it did not withstand the first signs of a darkening of the political heavens, and less than a quarter century was needed to change agreement into armed strife.

It did not need much to excite again England's suspicious temper. A renewal of commercial activity and economic prosperity, the appearance of a revival of the French merchant marine, brought about by the business transactions of the new East Indian Company, no doubt also the renewed energy instilled into the Navy by Maurepas, were enough to make that jealous nation think its despotic control of the ocean threatened. The maritime war of 1743 had no cause more pressing. The peace of Aix-la-Chapelle, which put an end to it, brought about in reality only a short truce in an almost uninterrupted period of tension and hostilities, and it could not be otherwise, for the genius of Dupleix and his accomplishments in India fully compensated for the cowardice of the French government as well as its incurable weakness in arousing in the English public mind an ardent wish to destroy France. The elder Pitt, a man great by eloquence, by talent and by the intensity of his patriotism, stirred up the glowing fire of hate which was thenceforth to let England loose against France, the nation which, through the whole century, embodied the spirit of resistance to her growing power.

And it is Pitt who, faithful guardian of the tradition bequeathed by the statesmen of the British Empire, condemned in the following terms a new truce granted to France in that merciless strife: "*France is chiefly formidable to us as a maritime and commercial power. What we gain in this respect is valuable to us above all through the injury to her which results from it. You leave to France the possibility of reviving her navy.*"

We must recognize that our implacable adversary saw clearly; for, under the skilful guidance of the duc de Choiseul, the French navy was to be again brought to a point of readiness and strength such as it had not known since Seignelay. This was also the time when the ardent wish to shake off the English yoke, and to strike through the invulnerable girdle of her fleets at her heart, gave birth to numerous projects of invasion, among which the most famous, and justly so, is that of the Comte de Broglie.

Finally, after fifteen years of reconstruction and recuperation, the struggle for American independence was to suggest to France the idea of taking her revenge for the humiliating exactions of the treaty of Paris and of profiting by the straits of her hereditary rival to regain world-wide dominion. It is unfortunate that her navy did not have at its head, at this time, a man who knew how to make war; the moment was favorable for the success of these views, but the instrument was lacking. Suffren alone fully understood the true doctrine of war, but being at a point too far removed from the center of the theater of hostilities, his successes could have but little influence on the final result. At the head of the French fleets *in America*, without doubt he would have changed the current of events. But of what avail could be men like d'Estaing and de Grasse against Hoods and Rodneys? These two latter names do but summarize the long period of preparation for battle which, without weakness or hesitation, by the sole force of heredity, had preached to the English sailors for two hundred years the religion of *action*.

But, though the attempt failed, the memory of it has remained, and all the more painful to England because it recalls to her the loss of her finest colonies in America. In the younger Pitt she will have an active agent of this resentment against France; having taken up his father's quarrel and sworn absorbing and implacable hatred to that country, he will seize every opportunity to injure her and strike her down. It is thus that he will let loose against

her the savage wars of the Republic and of the First Empire, still more infuriated against Napoleon because that great man will threaten more directly the English power.

On October 21, 1805, Nelson consummated the defeat of the French fleet and closed, to the profit of his country, the third chapter of the magnificent work of building up the English power begun under Elizabeth.

Beginning with 1815 France experiences a period of repose during which she heals her wounds and appears to disregard maritime affairs. In 1830, nevertheless, the Algerian expedition gives notice of her awakening, and nothing more is needed for British interests to think themselves threatened. The energetic attitude of the Minister d'Haussey was necessary to make our irritable neighbor admit our right to make France respected by a petty king of pirates.

I was unwilling to omit this well known incident precisely because it shows, with much precision, how the ministers of his Britannic Majesty at all times regard the attempts of other countries to expand even in a small way.

Much might still be said about the period which comprises the greater part of the 19th century, although it furnishes us with no example of great naval wars comparable to those of the preceding centuries. It affords on the contrary the spectacle of a great apparent cordiality of relations between France and England, which leads them to seal the two *ententes cordiales* of 1843 and 1856, and even to fight as allies for the same cause against Russia in 1854; it also reminds us that before 1870 the trend of opinion at the Imperial court was openly towards the *entente cordiale*. The word and the thing, as may be seen, are not new.

But I am anxious to reach a more important stage in the subject, not only because it is closer to us, but especially because it brings the logical and concordant conclusion of this too short resumé of the history of the naval greatness of England.

After the disasters of the terrible year, our unhappy country, mutilated by the loss of two provinces, wholly absorbed in the work of recuperation, first made good her military deficiencies. She laid the solid foundations of what had been wanting to her during the war, that is to say a strong army; then, feeling once more a warmer blood flowing strongly in her veins, she sought in colonial expansion a powerful remedy for her recent misfortunes. And in

a few years Tonkin, Madagascar, Dahomey, the Congo, etc., made up again for her an immense colonial empire comparable to the one she had lost in the preceding century.

Certain of her traditional enemies, far from being disturbed by this, saw with friendly eyes her entrance upon this path. But it led straight to territories which England assumed to reserve for herself, in virtue of her favorite adage that what belongs to no one must evidently belong to her, and so our colonial policy, joined to other causes that I shall point out, brought on the two very grave crises of the year 1898, the Niger and Fashoda.

That in so short a space of time, at two very different points of the colonial chess board, we should have verged upon war with England twice, the first time in the spring, the second in the autumn, shows that there evidently must have been between the two nations causes of disturbance more active and vigorous than those officially given out to the world.

Circumstances placed me in a position to see close at hand the consequences of the alarm of the Niger, and to experience the unforgetable hours of the sharp tension of Fashoda. That, without doubt, is why I remain profoundly sceptical regarding the sincerity and durability of friendly understandings, for it is not without profit to be forced by the grave events of this world to weigh the real and profound motives of great conflicts of peoples; and these motives have nothing in common with sentimentality.

A few lines taken from a document of that period are wonderfully appropriate to this part of my book and will enable me to throw special light upon the question we are now considering. This document, which dates from August, 1898, is the reflection of impressions gathered together after the excitement of the spring of that year had subsided, and (a statement the importance of which needs no emphasis) it at the same time prophesies the new difficulties which are to arise a few months later.

"*All these preparations* (the question was of the precautions taken on the occasion of the Niger affair) *as well at home as in the colonies, were useless. But the apprehensions which had given birth to the fear of an immediate conflict with England continued none the less to exist; it may be said that they still continue. We must not conceal from ourselves that the policy followed by our government and our alliance with Russia, despite the Tsar's peaceful intentions, have alienated from us the sympathies of England,*

which is persuaded that by striking France she would take away from Russia the principal source of her revenues; in short that English public opinion shows itself very favorable to a war against France. The reasons which, last March, led to the belief that war with England was to break out have lost nothing of their force, and, though the conflict no longer appears so imminent, no one can say that, one day or another, on the occasion of such or such an event, that cannot be foreseen, we shall not be the victims, as we were on the verge of being, of a brutal and sudden attack.

"If then, though warned by a recent past, we have not made all the arrangements demanded by the situation; if we have not made all the necessary sacrifices, will not a heavy responsibility weigh upon us?"

These fears were only too well founded, for hardly a few weeks had elapsed after they were formulated when the grave incident of Fashoda happened. I have written "incident" intentionally; it was, in fact, only an incident skilfully exploited to put an end to a latent condition of more general difficulties. It is easy to conceive that the disproportion existing between the possession of a fever-stricken waste of land and a war as formidable as that with which we were threatened does not permit regarding the former as the cause of the latter. The premonitions of this crisis could have their source only in a deep-seated organic trouble. To explain it, all the symptoms of an uneasy feeling between the two nations must be brought together and considered as a whole.

This study is so much the more necessary because, before the year 1898, the sincere friendship of England was an immutable article of faith for the majority of the deluded French people; immutable to such a point that, in spite of a first thunder clap in the month of March, many of them, and *not those of little consequence*, were pleased to make a mock of it when in October the probability of an armed conflict was spoken of. One more quiet friendly understanding bordering very closely upon a quarrel.

And yet the nature of the English sentiments, at this difficult hour, was not doubtful to anyone who wished to see. Public opinion, on the other side of the Channel, unanimously regarded French diplomacy as a constant annoyance, in direct opposition to England's plans everywhere in the world; in Egypt, in Africa, in Siam and in China. The principal grievance formulated against France was based on our policy of protection, which, by closing

the French market to English commerce, took away from it considerable openings and thus did great injury to it. Even the French-Russian alliance was a cause of irritation to the English people, for they saw in it a threat against themselves, Russia's constant advance towards India making her a probable adversary.

This state of mind was carefully fostered by English statesmen, by the press and by the theater, in every sort of way.

One must have read with the interest imparted by the anxiety of serious hours of life this page of our contemporary history, at the very instant it was recorded, to understand the value to be given to-day to too loud protestations of friendship. Among the propositions most frequently advanced to stir up English antipathies against France, there is one which must be mentioned. It is contained in an aphorism enunciated by the Prime Minister, Lord Salisbury: "*The decadent nations are a danger to peace,*" and at once applied to France: "*France is in decadence, therefore she constitutes a danger; she must be suppressed.*" The *National Review*, in a sensational article of November, 1898, drew a comparison between France, England and Germany. After having shown for our country the constantly diminishing birth rate and pointed out the continuous increase of population of the two others, that review compared the economic statistics of the three nations to derive from them the definite conclusion that France is growing progressively weaker and the other two countries are constantly increasing in strength.

From this to representing our country as incapable of developing the immense colonial empire conquered fifteen years before was but a step and one quickly taken; and at once the motive appeared; England, on the other hand, through her immense resources, her activity, and her overflowing population, was clearly indicated as the one to take up the burden too heavy for our weak shoulders.

Even our sad internal dissensions were devilishly exploited to prove the need of destroying the corrupting action of the latin races by the triumphant and civilizing supremacy of the anglo-saxon races.

This whole campaign, carried on in the way best fitted to excite popular feeling, in reality masked the true motive, always the same, which for three centuries has inspired British policy. The national prosperity of that people is built upon an indefinite ex-

tension of commerce, free markets and naval supremacy, the third of which is the guarantee of the first two.

But official statistics showed already, in 1898, that in the seven previous years the sum total of English exports had diminished 5 per cent, while that of imports had increased 4 per cent. These figures indicated a retrograde movement of British commerce, and its importance was accentuated by the fact that the same documents showed an opposite condition of affairs in other countries. A no less serious evolution of the great English Colonies also threatened England in her economic outlets. India, Canada and Australia, in their turn becoming manufacturing countries, escaped from the guardianship of metropolitan industries; and the search for new markets, for new customers, took on the character of a pressing necessity. It is at this very moment that France, on the one hand closed by prohibitive import duties, on the other interferes with England in her necessary expansion by her African colonial policy and her alliance with Russia, which brings the Far East into the question.

Finally, the considerable development of the different European navies is a threat to the fortunate possessor, up to that time, of maritime supremacy, and these three causes together logically impose upon England an aggressive policy in regard to France.

By destroying the French fleet, the most powerful after her own, she would make sure of her domination over other navies for many years. By taking from France her colonial empire, and notably Burmah and Siam, she would give new and immense outlets to her commerce. Finally, and above all, she would yield to her economic destiny, which inexorably compels her to crush her rivals, in order not to be absorbed by them.

That this war did not take place for sentimental reasons, attributable to the queen, it is said, takes away nothing from the strength of the arguments which incited to it; I will even add, as my independent opinion, that, in giving it up, the English government on this occasion lost sight of the doctrine of Raleigh, Cromwell, Shaftesbury and the two Pitts.

Less than seven years after a storm so violent that one of the most authoritative organs of the English press declared that "*conflict between the two great powers was inevitable sooner or later,*" Lamourette kisses are being exchanged, and there is no longer question of anything but peace and concord. Those who, in this

"entente cordiale," see anything but a momentary expedient, intended to make head against more imminent dangers, have not studied the causes and the *necessities* of English power.

THE MODERN CARTHAGE.

A new adversary, more dangerous than France for the moment, appears on the economic and maritime horizon; all the attention and all the resources of Great Britain are not too much to guard against her encroachments.

Against the more threatening storm from the quarter of Louis XIV, England designed the Triple Alliance, in which Holland, her aforetime enemy, figured; against the darker heavens in the direction of Germany, this same England to-day has found the shelter of an understanding with a nation but yesterday regarded as the irreconcilable adversary. The method is always the same. And moreover, since 1870, a gathering storm much more dangerous to the world-wide power of England than any previous one has arisen in the political heavens. The reconstitution of the German Empire has given a splendid impetus to the commercial expansion of that country; her merchant fleet, negligible less than forty years ago, to-day comes next after England's, and its tonnage, which has more than doubled in a short interval of ten years, while that of England has only increased 40 per cent, is increasing with extraordinary rapidity. German freighters furrow the seas, and under the enthusiastic propaganda of the *Flottenverein*, itself inspired by the Emperor, use every means to become in their turn the "*tramps of the ocean.*" Still more, the German "salesman" travels everywhere to-day, and by his savoir-faire, his inexhaustible readiness to meet every wish of his customer, carries off orders under the very noses of the English merchants in the very markets where they were most successful.

And that is not yet all; the economic policy of Germany gives England other causes of anxiety. She is in the way of absorbing patiently and surely, at least commercially, if not materially, the Netherlands. Statistics are instructive on this point; the increase of traffic of the port of Rotterdam is extraordinary, since it has quadrupled in thirteen years; but 70 per cent of this traffic is by the interior water-ways, and these ways *lead to Germany.*

As if better to indicate the trend of events, Amsterdam, Rotterdam's commercial rival, is seeking likewise to connect herself with

the Rhine by a canal. A new Holland question, of an unusual sort, has therefore arisen for England, as big with consequences as the old ones, though apparently more inoffensive.

It is not alone in the direction of Holland that the continuous expansion of the Germans threatens and disturbs England. The subjects of Emperor William monopolize each day more and more the city and port of Antwerp, which grow German, if not in nationality, at least in fact.

To take account of this slow and methodical infiltration, which will necessarily end in conquest, peaceful or not, but real, the magnificent work of M. Maurice Schwob, which appeared in the *Ligue Maritime,* must be read in its entirety. Any quotation which I might make from it would be inadequate.

There is not therefore merely a modern question of Holland; but the entire question of the Netherlands has come to life anew after the lapse of more than two centuries.

And finally, beyond and above all that, the construction by Germany of a powerful war fleet, its disquieting increase, the clearly offensive character of its conception, show plainly to England that this time her ancient maritime tyranny is in danger. This peril is so much the more serious because the new adversaries do not seem likely to commit the same errors which formerly cost to Spain, to Holland and to France their finest colonies and their influence in the world. They know that to be lasting economic prosperity must of necessity be based on *force,* in order to impose respect, and they are working to obtain that result.

One of their military writers, Colonel Goedke, said recently: *"The fairest memories of our commercial days attach to the time when the Hanseatic League dominated the sea, and we can recall that time with pride now; for at the moment when the liberal middle-class, after centuries of lamentable decay, prepares to retake the place which belongs to it in the State, it at the same time revives the idea of clearing the abandoned road which will lead us to supremacy on the sea by the creation of a German fleet. It would be a renunciation of the finest traditions of the liberal middle-class and a most serious misunderstanding of its vital interests, to turn the heart of the democracy from an increase and strengthening of the naval forces of Germany now and in the future."*

And better still to explain his thought, the same writer adds: *"If Russia had had in the Far East, two years ago, a few big*

battleships and a number of armored cruisers she would still possess Port Arthur, Manchuria and Korea. Japan could not have thought of making war upon her . . . . NOWHERE HAVE DELAYS MORE EFFECT, NOWHERE DO THEY COST MORE DEAR THAN IN WHAT CONCERNS THE FLEET. *No longer like the Romans can we build a fleet in three months; we need for that a continuous effort during twenty years, without losing sight of the object, and that is exactly why we have no time to lose."*

All that precedes throws a vivid light upon the present attitude of England and her very rapid change of front.

To-day it is against Germany that are directed the efforts of her statesmen, of her press and of public opinion; it is Germany that has replaced us, in less than seven years, as the point of aim for the violent attacks of the English people.

And in this England follows logically the unchangeable principle of her policy. In the stubborn onward march, with eyes constantly fixed upon her single aim, economic greatness, she takes inspiration from the watch-word set by Shaftesbury: "Carthage must be destroyed," and for her Carthage has been successively Spain, Holland, France; to-day her name is Germany and perhaps to-morrow she will again be called France, or very likely the United States or Japan. Necessarily pledged to violence to preserve the maritime power which is the nourishment indispensable to her life, she will see a new Carthage in every nation which seeks to acquire a portion of the empire of the seas.

This manner of looking at things is so little exaggerated that, on November 9, 1905, in an address delivered at the Lord Mayor's banquet, Mr. Balfour, the Prime Minister, said in exact terms: *"I believe that in future we shall not see war,* UNLESS WE CAN CONCEIVE THAT EITHER A NATION OR A RULER WILL ARISE WHO CANNOT CARRY OUT THEIR SCHEME OF NATIONAL AGGRANDIZEMENT EXCEPT BY TRAMPLING ON THE RIGHTS OF THEIR NEIGHBOR."

It is enough to recall how, in the course of history the English have always interpreted *their rights* to understand the full scope of the warning concealed under these flowers. If I have succeeded in this too short summary in bringing out the inflexible character of English policy, it will be understood why preparation for war against England is a sacred duty for every country animated with the legitimate desire to spread the rays of its progress beyond its sea frontiers; it is therefore a prime necessity for us if, refusing,

as it is to be hoped we will, to remain fixed in our commercial debility, we proceed to resume at once in the economic world the position which belongs to us.

In the preparation of this chapter, I have given the principal place to the consideration of England; this is because England's example shows better than that of any other combatant how the general policy of a people rigidly controls their strategy and in what narrow dependency it fixes the orientation of that important part of the military art. No other example could be more valuable than England's in this respect.

Certain publicists, it is true, and not among the least, on account of the positions which they have occupied, have many times argued and even lately declared that, in the field of naval warfare, a contest with Great Britain was impossible. I will not discuss this incorrect statement, and moreover one insulting to a great nation, rich as is ours in a glorious past. No contest is impossible, except to nations who give up in despair, and such nations are ripe for slavery.

THE FRANCO-GERMAN FEUD.

It would be superfluous to enter into long arguments to show why we should face the eventuality of an armed conflict with Germany; the evocation of very recent differences would amply suffice to demonstrate it. The possibility of a new encounter with that Power does not arise, as in the case of England, from causes so to speak impersonal. While the character of the British hostility is as it were general and derives from an unchangeable principle, applicable to all the adversaries successively opposed, a war with our Eastern neighbor would be but the renewal of a quarrel already more than two centuries old. This is not an economic struggle, it is an essentially political antagonism.

It is not without reason that the Emperor, on the frequent occasions which are afforded to him for expressing his ideas, said in speaking of France, "the hereditary enemy." This expression, which betrays an active grudge, sums up in fact the history of the hostile relations between the two countries, the continuous growth of the little state of Brandenburg from the second half of the 17th century to the reconstitution, to its profit, of the German Empire, and the constant opposition made by France to that development.

Everything, even to the resentment of the French Protestants

who were driven out by the revocation of the Edict of Nantes and who built up Berlin, has contributed to sow seeds of discord between the two States.

This union of Germany which French diplomacy not only did not know how to prevent, but on the contrary, helped to establish by the multiple errors of its policy, constitutes for us to-day a constant menace. The uninterrupted increase of her population, still more than all the other forms of her activity, prepares for us in the future formidable dangers, because it will facilitate for our adversaries the possession of that important factor of success, superiority of numbers, and this so much the better as our birth rate is the less. When, to satisfy traditional rivalry, and also in dispute over the heritage of Charles V, the Bourbons and Hapsburgs gave each other such hard knocks, they did not foresee that, thanks to their dissensions, a third marauder would one day seize upon the spoil.

French diplomacy perceived one fine day that it had weakened in Austria the necessary counterpoise to the disquieting encroachments of Prussia, and it made the Seven Years War; but it was too late. The great Frederick had already conquered Silesia and directed minds towards the *Germanic idea*, the definite evolution of which nothing could thenceforth arrest. In the very serious match which he entered upon against France, he was to win for his people the first game at Rossbach.

Though Prussia finally lost the second game at Iéna, she was to win the deciding one at Sedan. The blindness of France, whose successive governments transmitted as an article of faith the necessity of destroying the house of Austria, had prevented her from seeing a danger more to be feared. It is not impossible to attribute to an unconscious revival of this same fixed idea the passive acquiescence of the Second French Empire in 1866, in face of the new weakening of Austria by Prussia at Sadowa, a new error initiative of our own defeat.

It is therefore truly as much through the accumulated errors of French policy as by the persistent efforts of her own workers that German unity has been brought about.

After this long duel, of which the special and exclusive character is undoubted, and which settled the dispute by the definite loss of the match on the part of France, there was nothing to prevent an equally definite reconciliation between the two peoples. Just

as, in individual encounters, forgetfulness of reciprocal grievances is sealed on the field of combat, France and Germany could very well after 1870 have made a truce to their quarrels. The satisfaction to our enemy of having attained his object, in spite of our desperate centuries-long resistance, was fine enough to dictate forgetfulness of past injuries; on our side, the souvenirs of glory were numerous enough for the passage of time to be able to soften the painful impression of defeat. Considering everything, the Germans had Sedan, but we kept Iéna.

Such was truly the dominant feeling among our adversaries, for naval officers have preserved the memory of the eager civility, too demonstrative not to be according to orders, which was shown to them by their comrades of the German navy, even several years after the war, on all occasions when their common profession brought about meetings throughout the world.

To occupy the position of taking only the unequivocal *expenses* of the war, it would have been necessary not to ask of us a too exorbitant amount, and it could not reasonably be expected that France, shorn of two provinces, and with still bleeding side, would forget so cruel a wound.

The tearing away of Alsace and Lorraine from the mother country by violence has dug so deep a pit between Germany and France that nothing will be able to fill it up. And, as though this operation in the living flesh was not enough, it was aggravated by the Draconian stipulations of the treaty of Frankfort, extorted with knife to throat, and which place our country in a real condition of economic slavery. This rigor of the harsh law of the conqueror would by itself alone justify the revolt of a free people.

Therefore it is not, as beyond the Rhine they are too much pleased to say, because our hostility is ineradicable that it is our imperious duty to foresee war with Germany, nor is it because we were beaten; but it is because our defeat was consummated with a useless refinement of cruelty of which the acute memory cannot be effaced by time. The wound is always open and cannot heal.

I say *useless cruelty*, because the higher objective fixed two centuries ago by the Elector of Brandenburg was attained without that. That Germany committed a grave error in exacting the ransom of a portion of French territory, I for my part am absolutely convinced, for it has rendered forever impossible a reconciliation between the two nations, and, in spite of an apparent forgetful-

ness, this thought keeps up in French hearts the small but never extinguished flame of hope.

It is the military party, all powerful in Germany, which, it is said, demanded that condition; it is none the better for that. Louis XIV had no cause to congratulate himself, either, upon the policy of Louvois and the military party. In both cases the strategy was bad: under Louvois, in sacrificing the navy, of which the rôle ought to be preponderant; under Moltke, in creating for the future a permanent cause of reprisals.

And, if I repeat again that in my opinion Germany made a mistake, it is because I consider that she will not have too much with all her forces, all her resources, and all her faculties, to oppose a formidable danger which threatens her and by which she may well lose the profit of two hundred years of perseverence. The economic conditions of Germany have undergone profound transformations in the past thirty-five years. The trend of her people has changed; from agricultural it has become industrial and commercial. The modern Carthage, she has obeyed with extraordinary enthusiasm the watch-word of her Emperor, who has said to her, "*The future is on the sea,*" and she lives, especially to-day, upon the ocean. But also for her, as of old for the daughter of Tyre, "*danger is on the sea.*" The unprecedented impulse of her economic prosperity necessarily draws her towards the granite rock of the British power; she may well be dashed to pieces upon it.

Is it not, moreover, the very plain expectation of necessary future encounters which impels the Kaiser now to seek a quarrel with us? Are not we the mere screen behind which he seeks to reach the true adversary? Ah! if there were not an always acute question of Alsace, perhaps a glimpse could be caught, for the first time in four hundred years, of the possibility of throwing off the maritime yoke of England. Germany has not wished it so, and that is why we ought to anticipate a war against her which, this time, will be waged on the sea as well as on the land.

A singularly prophetic and disquieting voice has already made itself heard on this subject. Louis Blanc, in his *Ten years of the English people's history*, indeed wrote: "*Alongside of the gigantic struggles that Germany armed might provoke and carry on, the wars of the French Revolution and of the Empire would be no more than children's games. Napoleon, whose point of departure was at one of the extremities of Europe, had a long dis-*

tance to go before striking at the gates of coveted Capitals, and no one is unaware that his eagles were overcome with fatigue on the road from Moscow to Paris; but a German Napoleon would reach in a few leaps all the Capitals of Europe, except Rome. Germany with a military organization and SUPPLIED WITH A FLEET *would therefore be nearer than France to universal domination."*

These two contingencies create a very delicate situation for the French foreign policy of our times and toss it ceaselessly between the two opposite poles of anglophilia and germanophilia, about the axis of which our diplomatic world turns indefinitely. It would be interesting to show, in this connection, what an undoubted strategical error is contained in the French policy of the seven last years, oscillating in short between Fashoda and Tangier; but I am bound to limit myself.

It is easily understood that it would not be possible for me to pass in review all the special cases of conflict that can be imagined; moreover such a review would be useless, for not claiming to do a diplomat's work here, but having merely sought to indicate by concrete examples how what I shall call political strategy can be treated, I consider that the two principal cases just studied are sufficient.

THE AMERICAN CLOUD.

Nevertheless there are two other cases that I shall treat briefly, because for several reasons they are of very great interest. The question, moreover, concerns powers newly come upon the world's stage, but whose rôle, each day enlarging, attracts attention. From the point of view of the division of strategy that we are studying at this moment, these two cases constitute excellent lessons.

I have already had occasion, à propos of the Spanish-American war, to show the very old beginnings of that conflict. Its elementary causes are of a general nature and are not special to the single case of Spain.

The great island of Cuba was the first objective of the policy of the United States, because, on account of its value, extent, and riches, it deserved to be so favored. But it is not so much because the American government saw in Cuba a good opportunity as because she lay within the sphere of attraction traced by the Monroe

Doctrine, that her divorce from Spain was consummated by force after long and patient attempts at a mutual agreement.

But this famous doctrine, which is the fanatical *Credo* of the Union's policy, was by no means conceived for an isolated case; it applies marvelously to all occasions which afford opportunity to increase the patrimony of the star spangled banner. And Cuba is not at all, far from it, the only satellite which gravitates around that mighty star, the United States. Many other islands in the West Indies are still foreign to them, and it is on that account that several European powers, ourselves in particular, have an interest of the first order in following with the most extreme attention the manifestations of public opinion in America.

The very rapid strides of imperialism in that country, under the strong impulsion of that admirable statesman, President Roosevelt, the feverish activity with which the war fleet grows, until able very soon to dispute successfully the second place in the world, are so many undeniable symptoms of the state of mind which now directs the policy of that people.

For what purpose is the instrument of force, which in a very short time the powerful navy now being built in America will be, if it is not in case of need to compel the acceptance of the Monroe Doctrine? Mahan's lessons, as well as those of the war of 1898, have not been thrown away; beyond the Atlantic the indispensable weapon of maritime power is being forged, with full knowledge of its influence in history.

That the conviction that sooner or later they are to realize the dream of "America for the Americans" is deep rooted in the heart of every Yankee, cannot be doubted by anyone who attentively follows their remarkable evolution. Already constrained for many years past in this way by the teachings of their statesmen, they have found at the most favorable moment, in their present President, an incomparable professor of the doctrine of energy.

It is for that reason that none of the acts, none of the words of this popular leader can be indifferent to us. Scarcely a few months ago, in a much talked-of speech, President Roosevelt, alluding to the rôle of the United States in the West Indian seas, developed the idea that, without meaning to attack acquired rights on those shores, it was the Union's duty not to neglect anything going on there, and that by a sort of natural right they had a

mission of surveillance and even "*of high police, to establish order there if it was necessary.*"

The gravity of such a declaration, especially as coming from such a mouth, could escape no one; it is increased, furthermore, by the very fact of its vagueness.

Many good people, who think no one is moving in the world because they themselves remain congealed in immobility, affect to see in these words merely a warning to the opera-bouffe republics of Haiti and San Domingo; they would even freely applaud the intervention of the good policeman, but they forget that policemen often calm disorders by dragging everybody to the guard-house.

They likewise lose sight, even regarding this interpretation as correct, of the fact that there is no such encouragement to continue as a first success. After having confiscated the actual theater of the disorder in order to suppress that disorder, who could say that the other West Indian Islands will not have their turn? It is so tempting to offer one's good services when the proprietor is not at home and Europe is so far away!

But there exists, it will be said, no pretext for intervention in the islands still belonging to European powers. That is perhaps true to-day, but it will no longer be so to-morrow; the method has undergone the test of experience in the case of Cuba; in the message sent to Congress, two years before the war, President Cleveland laid particular stress upon the great interest to Americans of peace being established in Cuba.

He neglected to admit that the fires of insurrection were stirred up, on one hand upon Union soil by Cuban refugees who were received there with open arms, and on the other hand upon the shores of the island by former revolutionists who had become naturalized American citizens the better to plot without danger, under the shelter of a powerful protection.

The method is not even American, for it has long been known and practiced in the world. In what concerns us more directly, and without meaning to advance ill founded opinions, it may nevertheless be asked if the frequency of disturbances, during recent times, in the French West Indian islands, really has its single origin in internal political difficulties.

One fact, in appearance without significance, well indicates, furthermore, the powerful interest with which the government of the United States watches everything that concerns the West In-

dies. After the catastrophe of Martinique, the eagerness with which this foreign government brought the *first* assistance, and the exceptional generosity of her share in the work of relief in a country so cruelly tried, show that she follows with attentive eye all the destinies of the American islands. It is permitted to think that this generous impulse would have been colder if an island much farther off, Corsica for example, had been its cause. Recent events in Jamaica have given new strength to these impressions.

When such suggestive symptoms are pointed out, incorrigible sceptics of the class so numerous in France, of those to whom disasters have never taught anything, reply that the memory of services rendered and the similarity of forms of government guarantee an eternal peace between France and the United States.

As to the first point, it may be supposed that the events of 1778 are rather far removed from us for their memory to be so lively, and moreover there is no such thing as eternal gratitude. Finally, as to the second guarantee, it is to be remarked that though the *name* is the same for the two countries, the *thing* is very different.

All this, moreover, is of dreamland. History, with its brutal frankness, teaches us that the policy of sentiment is at most good for the Latin races; the Anglo-Saxons have never made use of it.

The danger exists in a latent state, but it is sure; if it can be considered as still far distant, it is none the less necessary to examine it with all possible care.

Strategy offers us two ways of preparing for it, and two only: either to sell the French West Indies to the highest bidder at the best price possible; or to get our forces ready in anticipation of a possible conflict with America, and, in the latter event, the lessons of the Spanish-American war, derived above all from Spain's errors, dictate to us the necessity of establishing at Fort-de-France an immense base of operations, capable of sufficing to *our entire fleet.*

The second solution would be extremely costly, for it is only by expenditures of hundreds of millions that there could be accumulated at Martinique the stores of all sorts, the docks, the defensive works, etc., for a naval force insuring superiority of numbers over the very important fleet which is now ready to leave the shipyards of America.

Moreover, would that nation allow us to make such an immense effort, out of proportion to the value of our possessions? I do

not think so; for after all the effort would be directed solely against herself, no military interest except that justifying any important sacrifice in the West Indies.

By selling Martinique and Guadeloupe to the United States, we would accomplish a fine and good piece of strategy; I insist upon the word for, far from deviating from our subject, we are showing by this striking example of what farseeing conceptions the military art is made. Unhappily we shall have been able scarcely to glance at the question, but that will have sufficed to make us divine the infinitely varied resources which politics brings to strategy; one is inseparable from the other.

Though these two islands are of little value to us, for they constitute a costly luxury, they would have much value for the United States, on account of their position of advance guard to windward of the West Indian sea. Fort-de-France especially would be for the Americans a naval base of exceptional strategic advantage when the opening of the Panama Canal to universal commerce has drawn into the West Indian sea the fleets of all countries. It is an incomparable advance post. The operation would therefore be an excellent one; it would be a most conservative investment on the one hand and on the other would relieve us of a real anxiety.

In what way would it be more extraordinary than the cession of Louisiana, made by Napoleon in 1803? The Emperor did an excellent piece of strategy that time.

In any event, between these two alternatives, there is no possible half-measure. Above all, let us not do as Spain did when, in 1848, wrapping her tattered cloak about her, she proudly replied to the definite propositions of the United States to purchase Cuba: "*Rather let the island be engulfed in the sea.*" Fifty years later Spain was to lose Cuba, without getting any payment.

THE YELLOW PERIL.

The actuality of the events which have just happened in the Far East, which makes them still vivid in the minds of all, will exempt me from a long argument to explain the reasons which render the extraordinary development of Japan a future menace to us. That nation, born to European life and progress less than forty years ago, has not halted in its advance, and has gained the first rank of world powers.

It is for reasons of a general nature that that enterprising people should be watched, and that preparation for war against them should be seriously faced. They also, obeying the excitations of their leaders, cherish I know not what Asiatic Monroe Doctrine, imagining an Empire of the yellow world under the domination of a *"Greater Japan."* Everything urges them towards this dream of glory: pride in their extravagant successes; their limitless ambition; their race hatreds against Europeans; the desire to free from servitude their yellow brothers; their unlimited increase of population, the surplusage of which overflows their sea frontiers; and finally their geographical position, which with its insular character imposes upon them necessities similar to those of England, and also the same desires and the same vocation.

The disclosure of Baron Kodama's report, which attracted so much attention a few months ago, therefore could surprise only those who had not followed the evolution of the Japanese Empire, or who were not informed as to the conduct of the Japanese in our Indo-Chinese colony.

There is no doubt that Japan, weakened by her very victories, will be compelled for not a few years yet to observe a policy of retrenchment, to repair her losses, to recuperate her overburdened finances and to prepare for new exploits. But even now the moment can be foreseen when, freed from her passing embarrassments, she will resume her racial policy. On that day France, which has become a great Asiatic power, will have to reckon very seriously with Japan. It must not be lost sight of that, beyond the principle of the application of her doctrine, Indo-China, an immense granary of rice, is for Japan an economic spoil worthy in all respects of her desires.

That restless nation, animated by a warlike spirit, penetrated, from the highest to the lowest of her subjects, with the grandeur of the mission which has been given them, aspires to guide the destinies of Asia. Under such a master, conscious of his strength and intelligence, the *"yellow peril"* is not a myth.

For us Frenchmen, if we wish to retain Indo-China, if we consider that magnificent colony necessary to us in view of our economic development, we have only the time strictly needful to make efficient arrangements to meet an onset which is inevitable but which will be the more delayed and the less menacing in proportion as we shall have succeeded in being stronger.

This is not the place to point out in what should consist, for us, the effort to make to defend victoriously Indo-China against the Japanese desires; that question lies outside of the fixed scope of my work, but nevertheless I will say that we must expect this effort to be *considerable*. Let us remember Spain in Cuba, and Russia in Manchuria, and we will then think that, however great the expenditures to be made in our Asiatic possessions to allow us to retain them, they are nothing in comparison with what we should lose in a disastrous war.

And here again it is necessary to weigh the expense which the assured protection of the colony would require against the value of that colony. If the latter is greater, no hesitation is permissible: we must prepare for the contest, and that without loss of time, to-day even, in order to put a timely restraint upon appetites that we recognize. Finally, one single thing is not permissible, and that is the policy of bandaged eyes and ears, which perceives the storm only when it breaks and when it is too late.

If at the beginning of this chapter it has been possible for a moment to believe that I wandered from the subject in taking up the questions which are treated in it, I dare to hope that such an impression has little by little passed away.

Nothing is more necessary to strategy than the precise determination of objectives, and I have wished to show above all that their selection ought not to be the outcome of a simple outburst of sentiment, of temporary conditions or chance, but that it ought to depend upon the permanent interests of the country.

I repeat it once more, because the subject is too serious not to permit reiteration—it is by a never ceasing collaboration of politics and of purely military strategy that one prepares himself for war.

Is it not also the former which arranges the alliances whose conclusion has a direct effect on military strength? At each page, so to speak, of maritime history, we meet examples of these alliances, between England and France, between England and Holland, between France and Spain . . . .; but these alliances, putting in play military forces whose relative displacement exercises an immense influence in the final balance, concern military strategy primarily. General strategy is made of their aggregate.

Finally, were it only for a single result, this chapter will not have been useless. It will have shown us, in fact, in the four ex-

amples which I chose solely because they concern us to the highest degree, peoples on a continuous and persevering march towards an always greater development. Whether we consider England, Germany, the United States, or Japan, we see nations knowing admirably what they want and wanting that strongly. And to attain to it, they utilize the two most powerful factors of strategy: *continuity of effort and national energy*.

CHAPTER IX.

Preparation for War: its Principal Divisions; Weapons and their Employment; Problem of the Battle Fleet; Navy Yards, etc.

If, as I believe, all the facts set forth in the preceding chapters have produced a lasting mental impression, it is unnecessary to insist upon the exceptional importance of the subject we are now to take up. It dominates the whole military art, and final success in war depends strictly upon the good or bad application of the principles upon which the vast program of preparation for war is based.

If we but glance at the past, many memories will come thronging upon us. Spain, Holland and France successively lost the empire of the seas because they had not prepared for war. England conquered France in 1805 through the genius of Nelson and the excellence of her fleets, but she also benefited largely by the naval improvidence of her adversary and the lack of training of his squadrons.

Italy was beaten at Lissa because she thought that an assemblage of materially powerful ships was enough to insure naval victory; she forgot that a fleet without a leader, without instructed and trained crews, is but a body without a soul.

Spain lost Cuba from having adopted the stupid policy of the ostrich, that hides its head under the pebbles so as not to see the danger; the lamentable Odyssey of Cervera is not of those that can be forgotten.

Finally, the overthrow of the power of Russia in the Far East was due to her not having for a moment anticipated that another nation which, for its part, had long been preparing, would one day stand up against her.

Thus, whether the question be looked at from one side or the other, from that of the conquered or from that of the conquerors, the evidence of the preponderant and decisive importance of preparation is plainly to be seen.

This proposition no one denies, because the experience of all

times is too conclusive to permit doubting it, and no principle is less disputed.

It is when the question of applying it arises that difficulties begin; for if there exists but a single correct and sure method of preparing for war, as I hope to demonstrate, on the other hand there are a thousand sentimental ways of understanding that preparation.

And immediately an important question requires elucidation. Ought we to study this preparation counting only on the resources that we have at the moment, or seeking, with a view to gathering them together, those that we ought to have? The question is a large one, as may be seen, but it must be answered. I shall do so with the entire frankness that the most elementary professional honesty imposes upon me; and that is why we are to study, before anything else, in this chapter, the means that *would be* indispensable in order to carry on a war with a chance of success.

No doubt can exist when the question concerns a nation like England, habituated through long centuries of usage always to follow the same way, regardless of change of instruments; she has but a single method of preparing for war, the good one, with tools that she has known how to make in time.

But it is not the same for most nations, who have experienced successive phases of wise plans and of weaknesses. If we were not so pressed for time, it would be of the highest interest for us, Frenchmen, to study throughout our naval history the ups and downs of our preparedness for war and the influence of the lofty views of Richelieus and of Colberts upon our success in warlike operations. As things are, practically, for a people resolved to break definitely with worn out methods and frankly to adopt an organization conforming to military principles, there ought to be two distinct preparations. The first, wholly one of transition, intended to meet the most urgent needs, will base its combinations upon the existing means, whether sufficient or insufficient; the second, simultaneously, will establish the really necessary requirements called for by the military conception and will gradually take the place of the first until it wholly replaces it when the task is definitely completed.

It was very late for Spain to prepare for war, in 1898, with what she could call then *"the actual means"*; likewise there was no longer time for Russia, in 1904, in similar circumstances.

The French effort of the autumn of 1898, to stand up against the alarm of Fashoda, was itself also very tardy. Nations which allow themselves to be surprised by Fashodas must be severely blamed and also pitied; they leave nothing to their navies but a single duty, that of saving the national honor by a desperate resistance. Great designs are forbidden to them.

To comprehend why I shall only treat of preparation in the broadest sense of the word, it is enough to consider for a moment that the employment of existing means falls within the province of the General Staff, that I have in no way knowledge of its views and that I should even be much embarrassed if I had to set them forth, not only on account of their confidential character but particularly because, in complete ignorance of certain higher reasons, it would be impossible for me well to explain the facts.

To cite but one example, while history teaches us, and I am truly obliged also to affirm it, that the principle of homogeneity of forces is fundamental, our Northern Squadron yesterday was still a heterogeneous assemblage without cohesion and consequently without well balanced strength. And there is still more; we know likewise that "*concentration of efforts*" and "*the exclusive character of the aim*" are incontestable truths. How should I succeed in reconciling the actual scattering of our naval forces, in formal violation of these principles, with the lessons of experience and my exposition of the doctrine?

I should be obliged to conclude that, if our Northern Squadron is to this day a composite of diverse units, if we are weak everywhere, it is because there are profound reasons of which I am ignorant, and this response would satisfy no one, especially not myself.

Another argument can be furnished which militates in favor of a study quite general in its nature, in conformity with the doctrine. If I take a question haphazard in the very overloaded program we are to accomplish, let us say, for example, the store of coal at Saigon, and if I say that we actually have in that port a stock fixed by regulation at 12,000 tons, every one will ask of me: "Why 12,000 and not 10,000 or 14,000?" And, in fact, we put our finger on the knotty point.

Even the simplest acts, the most unimportant, which have war for their object, ought all to be inspired by a military idea. In order that the figure cited above may be accepted, it is wholly nec-

essary to say what the naval force is whose needs it ought to satisfy, and also what is the predestined employment of that naval force, or, to speak more exactly, it is necessary to determine first of all what the naval force is that satisfies a precise military objective, to decide upon the operations that will be intrusted to it both as to number and duration, and finally to calculate as the last step the quantities of fuel indispensable to permit the said operations. In a word, the stock of coal is the unknown quantity of a military problem. We could multiply examples, we shall always reach this same conclusion.

So it is in this manner that we shall proceed; it matters little, moreover, whether the results at which we arrive are more or less exact; I do not pretend to undertake, by myself alone, a colossal task which belongs to the General Staff. The method alone is to be borne in mind. Any other would lead to writing a book of instructions without scope and without connection, by the use of figures taken from the various bureaus of the Navy Department.

I cannot insist too strongly upon the necessity of a military reason as the basis of decisions apparently most insignificant; for, in many countries, too often, especially in what concerns the furnishing with stores and the enlargement of stations of repair and supply, etc., the adopted procedures have been inspired by the narrow intelligences of bookkeepers exalted, through the favor of those in power or of circumstances, to functions too lofty for their puny capacities. It is the duty of the military chiefs to order these subalterns back to the ranks with an energetic: "*Cobblers, stick to your lasts.*"

Thus set forth, the subject discloses immense complexity, and we ought to think ourselves fortunate if, in the space which is parsimoniously measured out to us, we succeed in sketching it in broad outline.

THE PREPARATION OF WEAPONS.

THE GUN.—Battle ought to be the objective of every war; but, to fight, weapons are necessary, and it follows that the study of the weapons best suited to the struggle which it is proposed to sustain is the most urgent of prerequisites. Among the various weapons that can be imagined, there is one to which the very human wish to crush one's adversary the soonest and the furthest off possible has long ago assured the first place.

The most urgent first requisite ought therefore to be to study the rôle of the gun and the method of using it and to choose its characteristics with a definite military point of aim. Although the expression point of aim has a double meaning, in both senses it represents very well what I wish to say. It is, in fact, in its relation to the targets against which it is proposed to use it that the gun must be chosen.

The detailed and minute examination of the war ships of the powers with which we are liable to have conflict is, consequently, also a necessity to some extent disadvantageous. It would suffice, besides many other reasons, to explain why it is indispensable to fix initially the political objectives. That point settled, the task of the military man ought not be limited to inquiring what are the probable effects of the projectiles at his disposal against foreign ships *in service*. By so proceeding he would commit a great error; to avoid it, the fact that the weapon proposed to be forged will not be ready till several years have elapsed must be taken account of. Therefore the ballistic power of one's artillery ought to be established so as to suffice for the attack of the fighting units which are themselves *in preparation* in foreign countries.

It is painful to have to state that, in the French navy, this fault has constantly been committed; and yet it violates an unchanging tradition, familiar to all, in the amiable and profitable struggles of industry and commerce. When a manufacturer, in fact, wishes to beat a competitor, he does not limit himself to seeking an improvement which would put himself simply on an equality; he endeavors to study the methods of his colleague, and the trend of his ideas, in order to realize *before him* an undoubted betterment. In war the method is the same.

A concrete example will better explain my thought. Very few people in our profession would to-day deny that the battleships of the *Patrie* class will be somewhat out of fashion on the day when they join the fleet for service. This is not at all due to the slowness of their construction; they had within them, in fact, this original defect even on the day of their conception.

I shall probably treat this whole question later with the attention it deserves. For the moment, the gun only concerns me. Now the explanatory statement relative to the program of these projected ships, alluding to their armament of four 12-inch and eighteen 6.5-inch guns, contains the following phrase: "*With such*

arrangements, this battleship is the most formidable engine of war which has yet been built by any navy." One cannot help being struck by the surprising error contained in these few words; I pass over, be it understood, the venial one of the wording which applies the precise term *built* to a projected ship, and I come to objections altogether serious. The above phrase, as well, moreover, as the entire explanatory statement, in the comparison with foreign battleships, is absolutely silent as to the characteristics of the projects likewise being studied, at that very moment, in rival navies.

This omission is the more regrettable because England was preparing the *King Edward VII* class, notably superior to the *Formidable* and *Majestic* classes, etc., which were alone cited in the program of 1900. To further emphasize the error of principle, I will call attention to the fact that the *King Edward* is already in service, several years consequently before the *Patrie* and her sisters. Therefore the guns of our 14,000-ton battleships should have been designed to fight efficiently ships like the *King Edward*. The rigorous proof that this is not the case, beyond those already given, is found in this statement that the 6.5-inch gun, at the practical fighting distances adopted at the battle of Tsushima, is quite impotent against the *thin* armor of the English battleship.

It might be alleged in excuse that in 1900 the Russo-Japanese war had not taken place and that, consequently, lessons yet to come could not be profited by. To show the exact value that must be given to this excuse, I will observe that Tsushima did but afford a striking confirmation of ideas already brought into prominence by the Yalu and advocated since then in all navies, including our own, notably in 1896 and 1897. The unfolding of these ideas coincided with the appearance of the *rapid-firing gun and smokeless powder* which, by permitting regulation of gun fire at any distance, have favored the intuitive and unconscious progress of humanity in the search for battle at long range.

And immediately we perceive what an exceptional place the logical choice of weapons holds in the chapter of preparation for war. It is very late to question in private life how to repel an aggression if one has with him only a slender switch; care should have been taken, *before going out*, to provide oneself with a stout cudgel. It is likewise too late to discover that one's guns are insufficient once they have been built.

Once more, therefore, the study of this chapter must be based upon what we ought to have.

"Experience is the only source of truth; it alone can teach us anything new, it alone can give us certainty." (Science and hypothesis. M. Poincaré.) We shall establish our method of selecting weapons upon this fine maxim; we shall demand from experimental facts the data necessary to determine our choice.

And, consequently, every time that the features of a program of new ships are to be prepared, it will be necessary to recur also to this method. What are the ships that are being prepared by our neighbors, what are the dimensions and what the thickness of the different parts of the hull, what resistance will they offer to the penetration of projectiles, at the extreme fighting ranges practically used in known wars—such is the logical and rigorous analysis of the problems of detail which it will be necessary successively to resolve. The perforating power to require of the projectile, and consequently the minimum caliber of gun furnishing the required useful effect, will naturally derive thence.

This manner of acting is the only one which suppresses the vague solutions of sentiment and reduces to a minimum the part played by chance.

THE TORPEDO.—The process is the same for the torpedo, and, in a general way, for all weapons. The solutions thus far accepted for the use of the torpedo show the effects of the dearth of experimental facts concerning it. Moreover, its adoption for the armament of ships of war has occasioned the most varied transformations, without the principle itself, any more than the variations, having received the sanction of experimental test. Are under-water tubes preferable to those above water? The question doubtless merits discussion; but another of much greater importance ought first to be settled, which is whether the torpedo is truly a weapon for ships of the line. It may easily be understood that, if this essential point be decided negatively, the discussion of details would not even be proposed.

It is therefore the organic principle that needs to be elucidated, and in this respect the teachings of the late war will be very useful to us. In reality, it is in their intimate relations with each other that the different weapons must be studied. United upon one ship, they converge towards a single effort, the destruction of the adversary, and the action of each of them is necessarily dependent

upon that of the others. It is therefore quite inexact to reason as has always been done, as is too often still done, upon the isolated rôle of each of them.

For the torpedo a new development also is foreshadowed, and it seems as if a struggle similar to that which still continues between gun and armor is about to open. The resistance of the special protection of the *Cesarevitch* to the explosion of a torpedo, in the night of February 8, 1904, has awakened many hopes. To appreciate their value, there is need to investigate what new conditions of power the torpedo must satisfy, in the future, to destroy these hopes, and whether such conditions are attainable. For this weapon, as for the gun, it is therefore truly towards the future that we still must look and not towards an insufficient present.

THE RAM.—I wrote, a few lines above, that weapons examined from the point of view of the real value of their action were inseparable one from the other. I find a striking example of this in the case of the ram.

No weapon has given occasion to overflowing enthusiasm more than this one; it has had and it still has fervent and convinced advocates. And yet, to support such very strong convictions, there exist after all only very meager experimental data, that is to say a few isolated scenes of the rather restricted theater of the War of Secession, and the incident of the *Ferdinand Max* and the *Re d' Italia* at the battle of Lissa. In this almost general infatuation which still lasts, no voice of reason has been raised modestly to call attention to the fact that the gun in neither case took any part. It is therefore truly the separate examination of a weapon without connection with other weapons which has had such a remarkably lasting influence upon opinions.

If the question of the use of the ram is to be opened anew and fully considered, it is indispensable to examine it in the light of more modern examples.

THE FIGHTING SHIP.

With what we have already learned, we possess henceforth the desired data for taking up the complex and important problem of the fighting ship. I have well said *important!* What then is the prime necessity, in the infinite unlimited field of preparation for war, which can, in fact, in the material order take precedence

of that of giving to one's country the most suitable instrument for imposing respect upon all? Has not preparation for war been justly symbolized, always, by the popular expression *to forge its weapons?*

Few problems are so difficult to solve as this one, for it apparently admits of an infinity of solutions. It is not sufficient, in fact, to place weapons on a war ship; it is further necessary to protect them from the adversary's blows, it is also necessary to protect the ship itself, in such a way that an unfortunate blow may not instantly suppress the weapons by destroying the stability or the buoyancy of their floating platform.

It is no less indispensable to endow that floating platform with qualities of enduring mobility, which enable it to be brought at the right moment to the place of action.

Up to this point everybody is in agreement; but the difficulties begin when the question arises of determining to what extent the fighting ship shall be provided with the diverse qualities we have just enumerated, when, in a word, each of those qualities is to be measured out so as to reach the final compromise which every warship is. To note the passionate controversies which, to-day as always before, go on about the most widely different types, it would seem that the problem was in fact impossible; but, if these various special pleadings are attentively read, it is quickly perceived that they are almost all based upon the same system; affirmation without proofs, sentimental opinions beyond verification. Military inspiration, the master thought of every preparation for war, is lacking to them, whereas, on the contrary, it is the guiding thread which must never be abandoned in order not to be lost in the chaos of ready-made ideas.

In speaking of the battleships of *Patrie* type, then projected, to compare them with foreign ships, an official document was couched in these terms: "*None is better protected, better armed, or faster.*"

Whatever the respect which I profess for the opinions of others, and particularly when they emanate from those who direct our navy, it is impossible for me, *here,* not to point out the very gross error contained in the few words I have just quoted. If such contradictory conditions could be simultaneously realized, the philosopher's stone would have pretty nearly been found.

In the compromise which a fighting ship really is between these

multiple requirements, it is absolutely necessary to sacrifice some qualities to others; the only difficulty, I repeat, lies in the measure of this sacrifice. And the guiding thread of which I spoke above, the military doctrine, alone will permit us to determine this measure.

With the great captains of all epochs, Alexander, Cæsar, Hannibal, Frederick and Napoleon, with Suffren and Nelson, also with the great military writers, Clausewitz, Rustow and Von der Goltz, and finally with Mahan, we admit the capital strategic value of the offensive.

It is therefore to the offensive weapon par-excellence, the gun, that the paramount position ought to be given on a fighting ship. The greatest possible number of guns, of those which meet the minimum conditions requisite for that weapon, such is the formula.

A second factor of the offensive is speed: its requirements cannot be neglected, and its rôle admits of a discussion the more profound that agreement as to its value is rare; and that value is itself also necessarily relative. To determine it, it is likewise important to establish a comparison with ships projected in other countries. All the problems of war are concrete problems.

It remains to assure protection, and it is principally on this point that there are disclosed numerous heresies daily set forth. They all derive from that limitless trust, to some extent innate, which men accord to protection, and which leads them unconsciously to exaggerate it. It is this state of mind that has given birth on shore to fortresses with enormous walls and on board ship to water-line belts whose armor was never thick enough.

Instinct, from the beginning of the earliest hostilities, has impelled men to seek shelters from behind which they could give blows without receiving any. The long education of centuries of warfare, stimulated by the initiative of a few great captains, has been necessary to show that there exists a surer method of defending oneself, which consists in destroying the adversary by attacking him with fury. This instinct of self preservation is so strong that the valuable idea under discussion is not even at this moment, as we must admit, understood except by the élite.

"*The best protection that we can have against the enemy's fire is a well directed fire from our own guns.*" No one was better qualified than Farragut to express himself thus, and his deeds

have proved the excellence of this opinion. It is one which the search for basic principles has suggested also to us.

The rage for excessive protection has not its only source in instinct; it is also nourished by the chimerical and barren hope of reducing risks. The association of these two impulsive sentiments always causes the risks to be seen through a magnifying glass. The military idea alone can save us from exaggerations.

FLEETS.

It is particularly in the preparation of fleets that the military idea must be called upon to give us sure guidance in the task of multiplying the fighting unit thus decided upon in order to secure real naval strength. The constitution of fleets appears, indeed, to be one of the most important factors of war. However great may be the value of an isolated fighting ship, yet it is but a single unit, and forces are necessary to obtain superiority. The association of several units, that is to say the fleet, or, using a more modern appellation, the squadron, is the material embodiment of the idea of naval force.

The figure fixing the number of the units that ought to compose this elementary naval force evidently cannot be an arbitrary one; it ought necessarily to flow from the principles of war and from experience. Our squadrons in France comprise six ships; why? It is something about which we cannot remain silent, for it does not suffice to evade the difficulty by the vague formula: *"It is generally admitted that squadrons should have six units."* This *generally* is, moreover, limited to the French navy; since in Germany as well as in England the squadrons of ships of the line are composed of eight or nine battleships.

The choice must be made by weighing all the considerations, strategical and tactical, which permit combining the maximum manœuvering facility of the adopted grouping with the minimum division of command.

The main fleet once constituted, there is need to determine the practical conditions of its employment. The function of this main fleet is to move about in order to offer battle; it is necessary to precede it with look-outs for the same reason that an army on the march has need itself to reconnoitre. And at once there is occasion to throw a little light into a corner of the subject which dis-

sertations more numerous than the grains of sand on the seashore have not a little contributed to obscure.

I have only spoken until now, it will be noted, of a single type of fighting ship, as being in fact the unique solution of the problem set and solved by the military doctrine; and if I have made no allusion to others, it is because there are no others.

There are frequent occasions to observe an abuse, in writings upon this subject, of a familiar expression: "*the division and specialization of labor*," when the question concerns the advocacy of such or such a type of ship. This law, constantly applied in trades, can very well be justified in the affairs of war, but upon one definite condition: that is, that it be not applied at random, as is most frequently the case. This law is invoked to justify the conception of new types, not differing in any essential way from ships of the line properly so-called, and to which there is assigned I know not what vague and indefinite rôle in far off seas. It is not observed that thus the first step is taken on the downward path which leads to the specialized classes of the colonial fleet, which were explicable when powerful navies were localized in European waters, while the war ships on far off stations found only savages to combat. All navies have given up these foreign-station fleets, we ourselves have abandoned them with much regret; this is not the time to make them rise again from their ashes.

We must not for a single moment forget that it is the labor which it is necessary to divide and not the tool. But the labor which we are here considering is war; the main business of that labor is fighting, and we have rightly set apart for it the fighting ship. This ship will be, moreover, of a single type, since to-day fighting is carried on the same in the Sea of Japan as in the Mediterranean, in the United States the same as on this side of the Atlantic. But to facilitate the execution of the principal task, other labors of lesser importance, such as the lookout service and reconnoitering for example, will be usefully intrusted to ships in which everything will be sacrificed to the perfect accomplishment of their accessory labors. These will be fast ships, good sea boats, having no other function than to see and to watch for the main fleet. It is the province of the General Staff to decide upon the general features of these ships, ceaselessly guided by the necessities of war.

Other ships, normally employed in peaceful pursuits, passenger

or freight carriers, can very well fill this rôle in time of war. But it is during the period of peace that it is needful to regulate to their smallest details the armament, mobilization and future employment of these auxiliary cruisers.

In this connection, I greatly desire to refute at once a reasoning by which it is pretended to assign nowadays the function of lookout which we are discussing to the class of ships commonly called armored cruisers. Let us observe that these ships are themselves fighting ships and that already, by assigning them to this too unimportant use, the true principle of the division of labor is violated.

But it is said: "To push back the enemy's lookouts, it is necessary to have some that are more powerful than they are, and as those ships will encounter in their turn similar ships, they must be able to fight." This argument is so insidious that it is readily accepted and we are then fatally led on by it to types of cruisers bigger and bigger, more and more armored, and to building a new fighting fleet alongside of the first one. I will add that we would infallibly arrive at an identical result by similar reasoning with the torpedo-boat taken as the starting point. This is further evidence that it is necessary to hold tightly on to the guiding thread of military doctrine so as not to go astray.

Whether the question concerns the construction of fighting ships or of scouts, this military idea imposes homogeneity. It dictates the number of absolutely like units which it is necessary to build at the same time, in order to substitute a new naval force for another one actually existing and composed of old units. And, in fact, navies should be strengthened and kept up to date by adding to them homogeneous naval forces, not units. The former system, by maintaining the principle of homogeneity, preserves the correct balance of the forces; the latter constantly compromises that principle, and ends by making the national fleet what has very justly been called a *museum of samples*, under the appearance of making each of the successive units profit by actual improvements. And this result always comes precisely from lack of foresight.

An example very much to the point is at hand to illustrate this: It is well known that in the course of their construction several battleships of *Patrie* type had their armament changed, their 164.7 mm. guns being replaced by 194.4 mm. guns. This measure, in itself excellent, the increase of power due to the sub-

stitution being considerable, is to be regretted in its application, because it was not applied to all ships that are to constitute the naval force. The six battle-ships of *Patrie* type are in fact intended to fight always grouped together; it follows that the fighting range favorable for the 194.4 mm. guns will render inefficient the intermediate batteries of the battleships that are not provided with that caliber, and that any other range, favorable for the 164.7 mm. guns, will make superfluous the excess of power of the armament of the other units. The change should have been made on all six ships or on none. This measure is bad, because it does not accord with the military idea.

Yes, beyond a doubt, the improvements of all sorts that the industrial world offers for the use of the navy cannot be too largely applied to the bettering of fighting ships building or projected; but they ought to be utilized in successive stages by applying them to each of the strictly homogeneous squadrons successively constructed and not to units.

This question of naval progress is one of the greatest cares of preparation for war, and, on that account, it ought to be strictly subjected to the directing body which bears the heavy responsibility of that preparation. No good military prevision is possible if a single wheel in the train escapes this control. To this directing body, and to it alone, it belongs to give the impulse which guides *all* investigations having naval progress in view, because it alone unfolds the military idea. On this account all the services of investigation and experiment, laboratories, proving grounds, experimental commissions, etc., ought to be rigorously subordinated to it; it alone is capable of dictating the programs of investigation, of pointing out the way in which it is necessary to pursue them, for it alone determines the objectives. An improvement may be wonderful when considered by itself, and yet have no value if it fails to meet the higher aims of war.

Military needs exercise their controlling influence upon even the smallest details of ships, not at all, I hasten to say, to interfere in their management or their selection—that is the engineer's affair—but to determine the adoption of their principle itself. In this connection, it is not bad to recall the perfectly useless discussion which began in the navy, and which is still going on, upon the question of boilers.

I am far from ignoring the excellence of the reasons that have

been given on one side and the other, by experienced technicians, in advocacy of such or such a model; but these reasons are the arguments of *workmen*, if I may so express myself, and, whatever their importance, they would have no weight if sure military advantages were found on the other side.

Finally the simplification of the complicated mechanism of our modern ships is also the constant concern of preparation for war, since it exercises a direct influence upon supplies.

The greater the variety of apparatus in service use on board ships, the correspondingly more numerous are the classes of spare parts, and also the more complicated and costly will be the task, already colossal, of preparing the supplies of every kind which support the life of fleets. It is therefore a necessity of the first order to facilitate this task, already overwhelming by itself and a military necessity, for the financial resources available for preparation for war are necessarily limited *in every country* in the world. The quest of the greatest military return from a given financial effort is, in reality, the principal problem of the preparation. Therefore every measure that tends to diminish passive resistances, that is to say small unproductive expenditures, in order to transfer them to the augmentation of forces, thereby increases the military return and the national strength.

That is why, and no serious objection can be raised on this point, "*the last say*," as the English, who are good judges, call it, ought always to belong, in all naval discussions without any exception, to the body alone responsible in the wars to come, the General Staff.

TACTICAL EXERCISES.

Our fleets are ready; they have been constituted with a view to war, it is now necessary to put life into them, to *prepare* them with a view to battle.

The division of the preparation for war which has very improperly been called *Tactics* has but very distant relations with naval tactics. There is an ambiguity in the use of the word that it would be very desirable to get rid of by choosing another expression like "*School of Signals and Evolutions*," for example, as, in the same order of ideas, we speak of the school of the soldier, of the company, battalion, regiment, etc., or of schools of gunnery.

Reduced to these proportions which are alone exact, it occupies

nevertheless a considerable place in the patient and laborious labor of times of peace.

Squadrons are prepared to execute in presence of the enemy the combinations of battle tactics by practice exercises and a regular methodical training accustoming the units to manœuver together. The necessary readiness in the attacks and replies which take place on the field of naval battle can only be acquired by a long, very long practice in the fleet evolutions of peace times. It is only possible, at that decisive moment, if the personnel which directs the different units of the group possesses the confidence borne of the practice of frequent exercises. This necessity of training appears so much the more urgent because the use of signals during action must be restricted. Perfect obedience to the instructions of the chief on the field of action itself can evidently only be secured, without signals, if all the subordinate leaders of the naval force have identified themselves, so to speak, with the idea of the chief, by the constant practice of manœuvers in common.

A result so important evidently cannot be secured without frequent puttings to sea of the squadrons, without exercises that, as nearly as possible, resemble probable occurrences of warfare, without spending money, consequently. Above all it cannot be attained except under the guidance of the military idea which controls the preparation of war.

Whatever may be the ability of those who command the squadrons, it is not in accord with good preparation for war to leave to them the initiative of the method of training those naval forces. Their task of carrying out of that training is sufficiently important to require their full attention. But in order that the result obtained may be beneficial, it is wholly necessary that the method of instruction be general and dictated by a superior will, the very one which bears the heavy responsibility of future war.

Any other procedure is eminently bad, since it leaves to intelligences, to capacities and to temperaments which are essentially variable, since the commanders-in-chief themselves change, the care of one of the principal duties in the preparation for war. We must not be surprised therefore if profound modifications in the direction of evolution of the naval forces, in the ideas that are revealed by the manœuvers and, what is more serious, in the very principles of fighting, happen in turn in the course of a few years.

I do not propose to stifle individual initiatives; no navy in the world has as much of that, perhaps, as ours, but it is necessary to direct them in certain channels. And, in saying this, I think in spite of myself of a frequent scene in our life on board ship, and one very familiar to us. The watch has manned the falls to hoist a boat; the men strain on the ropes but still the boat does not budge. Look closely at the conditions under which those men work; each is exerting himself individually, but the fatal discord of wills produces the disaccord of forces which mutually interfere, and the resultant is nil. Suddenly the boatswain's pipe sounds and the scene changes; its modulations as they rise and fall mark time for the elementary efforts, which become synchronous and multiply their actions. The boat is hoisted.

I ask nothing but this for preparation for war; it is necessary that everybody obey the pipe of the boatswain, who in this case is the directing body of the General Staff. To realize what is the devout wish of all, the "greatest navy," an outward discipline that is often a mere mask is not enough, there is needed above all the discipline of thought which is the ideal that the establishment of the Naval War College was precisely intended to bring about.

Squadrons can only be successfully trained by a methodical graduation of exercises, impossible to realize without the continuity of convictions that a central directing body alone possesses. This is so well understood in all the thriving navies, that the program of squadron exercises is drawn up by the General Staff, or whatever takes its place, for a whole year, and regulates the progression of the instruction, beginning with that of each ship, then continuing with that of the divisions forming the elementary grouping, next with the squadrons, and finally concluding with the annual grand manœuvers. It has been too often forgotten, in France, that the full benefit can only be derived from an assemblage of units if each of them has received, as a preliminary and by itself, its individual initiation. The assemblage of units can give only bad results, if the ships have not freedom to work alone as often as possible.

NAVY YARDS.

The instrument being prepared and quite ready, more still remains to do. In preparing for war, we are doing above all a work of prevision, and consequently it is indispensable to think of the

maintenance of this instrument, taking the word maintenance in its broadest sense. Thus it is that, *concurrently* with the construction of a new fleet, there arises the obligation, from which no country can escape, to build dry docks, workshops, tugs, lighters, coal barges and storehouses, in a word the means of action that sustain the life of this fleet. I strongly insist on the word *concurrently*, since it would be too late to await the entry of the new fleet into service before solving these apparently secondary problems.

Thus then every new program of new constructions ought of necessity to include an additional section devoted to all the works to be undertaken in the ports with a view to meeting all the requirements, without exception, of the new types. This imperious necessity would suffice to make evident, if there was still need of it, the legitimacy of what I have already stated, that the choice of new fighting ships plays, in preparation for war, a considerable part, so great a part that it could not be justified if it were not strictly subordinate to a military idea as well as to a military objective.

Nothing could excuse carelessness in such a matter; fighting ships, especially in the last ten years, in all navies, have obeyed an irresistible impulse toward increase of displacements, owing to increase of speed, of protection and of armament. At this very moment, everywhere alike, there is preparing a new jump to the extraordinary displacements of 18,000, 19,000 tons. For my part, I see nothing objectionable in this, but on the formal condition that all the consequences of the notable increase of dimensions of our ships be given mature consideration. In five or six years from the time when the first keel plates of the new ships are laid will we have big enough dry docks for them? Will the inner channels of our ports be large enough for them to manœuver and swing in? Will we have tugs in sufficient number and of sufficient power to move them about? Finally, will we have enough landing stages, lighters, storehouses, mooring places and wharf room, mooring anchors, etc., to enable this new naval force to be outfitted in the most efficient way?

If the construction of new types is a military necessity—and how admit of such expenditures if it is not—there can be no escape from the obligation to satisfy all these demands and to supply the Navy Yards with everything which they need, soon enough

for the new fleet to be provided with everything on the day of its entry into service.

It may be seen from this too brief enumeration that preparation for war cannot be unmindful of the question of navy yards.

Here, where we are only sketching in broad outline the general view of the problem of preparation in order to show all its needs, I shall limit myself to this simple observation. It is even more necessary that the organization for furnishing stores and supplies should be under military control. The benefit that is derived, in the case of modern armies, from the direct dependency of the commissariat upon the commanding officer has long been recognized. This benefit is no less great in the case of naval operations. To assemble at a certain number of points, judiciously chosen, the fuel, the oils, the provisions, the spare articles, the ammunition, etc., in a word the enormously complex aggregate of things without which a group of ships cannot subsist, constitutes a fundamental work of war.

Consequently its control cannot in any way be confided to others than those who have the charge of preparing for war. And first of all, is not the determination of the points at which the said supplies ought to be concentrated dependent beyond anything else on the plan of war? Is it not equally subordinated to the execution of the operations? To cite but one example which particularly concerns us, it is self evident that in the case of a naval war against a power of the north of Europe, a project of supply that should simply provide the respective allowances of the Northern and Mediterranean squadrons, one at Brest, or Cherbourg, the other at Toulon, would be far from meeting the requirements of the war.

The plan of operations being settled in its main features and in its essential details, the scheme of supply and its execution are a faithful copy of it. If we select Bizerta as principal base of operations to satisfy our military objective in the Mediterranean, it is at Bizerta that the resources of our naval forces must be concentrated without stripping Toulon. If we anticipate a strong effort to be made in the North, necessitating sending there our Mediterranean squadron, it is necessary, without losing a moment, while the new fleet is building, to assemble in the navy yards of the Atlantic and the North Sea the supplies needed by the whole fleet, in order that that fleet may find them at the hour and place desired.

It is only necessary to set the problem in order to judge how incompetent the administrative service is to solve it; it is so by definition, and yet it is too often upon this body alone that the crushing and once more wholly military responsibility of this division of preparation rests.

And here again, in face of the difficulties of the task, we cannot but profoundly feel the importance of simplifying the material on our modern ships and of limiting improvements in it to those that are strictly legitimate.

COAST DEFENCE.

This accumulation of supplies of all sorts, at various places on shore, evidently represents a considerable financial effort; but it above all symbolizes a military effort, since it forms an integral part of the naval force it feeds and keeps alive. On this account its destruction by the enemy would break the balance of forces in his favor and ought to be guarded against. In mentioning such considerations, I am entering upon the subject, so important, so little understood, and yet so simple, of the defence of the coast.

In the eyes of the masses, as we have already observed in the course of the history of the Spanish-American war, this expression defence of the coast awakens the idea of a sort of gigantic coat-of-mail covering the entire shore and protecting it from any wound. Even the smallest straggling village of fishermen, hidden at the back of a bay, dreams of and demands an inviolable cordon of batteries, forts, guns, mines, torpedoes, sub-marines, etc., without counting battleships and other floating forts. No conception of the defence is more dangerous and more false besides than this one, for it leads to nothing else but a scattering of efforts instead of their concentration. It is this which has brought about the construction of battleships called coast-defence ships, the inadequate realization of an inexact idea, because it was not in conformity with military principles.

As always, in fact, it is from the military idea and from it alone that guidance must be sought in choosing the points to defend, that is the bases of principal and secondary operations for the use of the military force, that is to say of the fleet, and only of the fleet, and also in properly distributing, at different points of the ports to be defended, the various means of defence at our disposal.

But if the points of the shore to be defended are very few in

numbers, it is wholly necessary on the other hand that their defence be extremely strong, the strongest possible. The fleets ought to find there, in short, an absolutely sure shelter and an invulnerable protection, so that the operations of supply and repair may be carried on in the perfect peace of mind that is inseparable from the thorough and rapid execution of such operations. And furthermore the strength of this defence ought to be such as to suffice by itself surely to repel any attack of the adversary, so there may not be even a temptation to divert the fleet from its thoroughly offensive rôle to a passive employment that is not proper to it.

I continue to dwell upon this subject, for the still vibrating echo of the lamentations of the people of Cette, on the occasion of an incident of the quite inoffensive grand manœuvers of fifteen years ago, is an indication of the much more violent outburst that would occur in case of war. Public opinion, therefore, must be fully educated on this point; it is urgent to engraft upon it the very clear feeling that should the port of Cette or any other port be destroyed, that event would have at most the scope of an incident without any influence upon the final result of the war. Let us be victors, and the conquered will pay a high price for the slight damage he may have done along the shore, if it so be that he even had the time to waste there.

In thus disciplining public opinion we are still carrying on the work of preparation for war and consequently are practicing the best of strategy.

Among the factors of the defence, there are surely none more important than those whose mobility gives them an extended field of action, that is torpedo-boats and sub-marines. Few of the elements of naval material in all its complexity have been the subject of discussions so numerous and so excited as these; exalted by some, despised by others, they have rarely found judges impartial and calm enough to define without prejudice their sphere of influence. One who reads carefully all that has been written during the last twenty years upon the function of the torpedo-boat and the sub-marine in future wars will be struck with the chaotic state of ideas on the subject. This observation would be inexplicable if it were not at the same time stated that all these writings, with a few rare exceptions, are the product of the imagination alone; it is therefore not surprising that under fancy's guidance

minds wander. It is still the thread of the military idea which enables one not to go astray and to base conceptions regarding these naval instruments upon the lessons of experience.

It is not enough to say: torpedo-boats and sub-marines are necessary; one should add why, should specify their intended use and the tactics of that use. When the military problem has been thus specified, it will very quickly be perceived that torpedo-boats and sub-marines are the embodiment, in a very remarkable way, of the principle of the defensive-offensive defined by Jomini.

The focussing of these two weapons, the determination of the conditions of war that they should satisfy, their relative value in comparison with the principal forces, the conditions of their utilization alone or in combination, are so many very important problems of detail in the preparation for war. Notably as far as the sub-marine is concerned, the unending verbal quarrels of these latter years, à propos of the different types under trial, would have appeared to all very idle if the determination of the submarine had only been recognized to be an exclusively military problem and not a technical problem in naval architecture.

ADVANCED BASES.

It is part of the preparation for war to specify and enforce in this matter, as in all others, the conditions to be fulfilled. It is not merely the bases of operations in home waters that need to be provided with a seriously organized defence; the advanced bases of the fleet must also be put out of reach of a sudden attack.

The principle itself of these advanced bases is not contestable; no fleet operation in far distant seas is possible without a port where that fleet can be resupplied, repaired and re-enforced after previous operations. An advanced base was already indispensable in Suffren's time, and it was for that reason that he took Trincomalee; in the preceding chapter we have seen the English policy, with the admirable continuity that characterizes it, acquire successively, in every corner of the globe, the supports indispensable to her naval strength.

It is to the highest degree an essential act of the preparation for war to select the advanced bases, to defend them, and to equip them *with a view to a fixed military objective.*

In this way the preparation is so tightly bound to strategy that it is so to speak strategy itself. Outside of many other proofs,

that the Russians had not prepared for war is to be understood from the fact that Port Arthur was very badly chosen as an advanced base and was almost destitute of everything.

War is not prepared for, in fact, if all the contingencies that can arise have not been envisaged, and especially if the means of maintaining in a sure manner, at the advanced base, forces superior to those of the adversary have not been arranged.

It is indispensable to define the conditions that these advanced bases ought to satisfy and which determine their choice; the application to the concrete case of our Indo-Chinese colony might serve as an actual example, and there again it will readily be admitted that half measures are the worst solutions. War does not admit of half-measures; if therefore it requires an advanced base in Indo-China, all the consequences, and they are big, *very big*, of this decision ought to be faced now, in order to satisfy them before war breaks out.

PLANS OF OPERATIONS.

I now come to a subject whose importance will be clearly apparent to all eyes when I say that it concerns plans of operations. We come, in fact, to a class of cares that truly includes all others, since it is their point of departure. The preparation of plans of war is the master key of preparation for war; it is also its skeleton upon which all the matters precedingly enumerated are successively built up. If this method which I have followed had not been that of synthesis, which seems to me best adapted for the comprehension of strategical ideas, I should therefore have begun this chapter by affirming the necessity of a plan of campaign.

It is only reasonable to believe that a planned campaign will result better than one in which decisions are reached under the spur of events. We know, moreover, what military chiefs and writers thought of it, and we will say with Napoleon: "*Nothing succeeds in war except in consequence of a well arranged plan.*"

The political objectives indicated by the government of a country ought to give birth each to a distinct plan, worked out in all its details. For this very reason each plan involves decisions to be taken with a view to concentration of the naval forces. And it is at once perceived that this concentration cannot be dictated by mere geographical requirements, but that it depends upon the adversary's own forces.

A new idea arises: that of number. We know already that the unit force is a squadron; there remains to determine the number of squadrons that the country should possess. This figure flows directly from three data: the estimation of the forces of the probable adversary or adversaries, the plan of operations and the financial resources. The total naval strength of a great nation is therefore not to be controlled by a purely arbitrary decision; it should depend upon considerations than which none are more weighty, and no figure whatever has any value unless it is thus based. Our most recent naval program, in imitation of all the preceding ones, limits to the figure of five squadrons of six ships the total of our naval forces of the line. It neglects to explain the military conception upon which this figure is based, and this is the more regrettable because it would very quickly be perceived that it is quite insufficient.

Concentration ought to be studied with a view to securing the possibility of making the greatest possible effort against the weak point of the enemy. It is therefore the veritable photograph of the plan of operations, and gives a view of the thought which conceived it.

It is thus that England, with the calm audacity of the strong, has distributed her squadrons in such a manner that her conception of the future war is plainly to be perceived.

And since I am speaking of the case of England, I find in it the subject of an interesting remark upon the infinity of the resources and objectives of strategy. By seizing upon Gibraltar, the naval policy of England not only increased her military strength by possession of an exceptionally well situated base of operations; above all she took possession of the key to the gate of the Mediterranean and put an obstacle in the way of all our future attempts at concentration of our forces.

Already we must recognize that the navy of France is not favored by her geographical position; the distance between the two seas that bathe her shores, by separating her bases of operations, is a serious obstacle to the junction of her fleets. This was clearly perceived before La Hogue, when the naval forces of the Mediterranean, stopped by a long series of contrary winds, could never join Tourville and bring to him re-enforcements that would have sensibly diminished his tremendous inferiority.

The conquest of Gibraltar, by a hostile naval power, has very

considerably aggravated these original conditions of inferiority, and it can be said that the history of the unfortunate wars of France against England is also that of the vain attempts to unite the fleets of Toulon with those of the Atlantic. The project of invasion of England in 1759 was abandoned, as was later to be that of 1805, for the same causes.

The squadron of La Clue, set out from Toulon to join that of Conflans, not having got by Lagos, where it was annihilated by the English fleet of Admiral Boscawen, the strategic plan that was wholly based upon this junction crumbled away at the same time, just as that of Napoleon's was to do, when the defeat of Villeneuve by Nelson destroyed all hope of uniting the Toulon fleet with those of Ganteaume and Missiessy.

To-day conditions are equally unfavorable to us. Our political interests, extending over two seas far apart and separated by a narrow passage guarded by a powerful nation, necessitate the permanent division of our naval forces; but, for that very reason, they are a source of weakness.

At Gibraltar, strong base of operations, English naval strategy unites all the advantages of "interior lines," so well defined by Jomini, which permit meeting our Mediterranean and Atlantic fleets separately and successively, with all the other advantages that an immense superiority of force gives. And yet, we know it from the history of the campaigns of all the great captains, it is the relative value of this superiority that it is the important point to seek for in war; it is by securing it at a decisive point that we can hope to fight England successively.

To suppress Gibraltar is the only way of doing this, not at all by forcibly seizing it, for it would be necessary first to overthrow the English naval power, and that is the very problem we are facing, but by turning its flank. The Inter-Seas canal, by furnishing a permanent communication between the Atlantic and the Mediterranean, takes on the character of an exceptionally great strategical labor for France. By permitting us to bring about at will, under conditions of perfect safety, the junction of all our naval forces, either in the Atlantic or in the Mediterranean, it would reverse positions and give to the French navy, over the British navy, the immense advantage of "*interior lines.*"

I shall perhaps have occasion to return some day to this very interesting subject; for the moment, I have merely wished to call

attention to one of the thousand aspects under which this monumental task of preparing for war presents itself. If the reasoning that has guided me has been attentively followed, there should be agreement that I have been led to the preceding conclusion by military exigencies of the most pressing character. To convince the most incredulous it will be enough, I think, to recall that the digging of the Kiel canal is due to motives of the same order as those we have just noted. Without turning up their noses at the economic advantages that they could derive from it, the Germans have above all wished to construct a strategical passage connecting the North Sea with the Baltic and freeing future concentrations of their naval forces from dangerous dependence upon the narrow passages of the Jutland peninsular. This project of an Inter-Seas canal has for many years been the object of the most violent attacks and, what is much worse, of the indifference and apathy of the majority of people. But, I emphatically declare, its execution is a strategic necessity of the first order that has not been properly weighed in the criticisms put forth, and compared with which the most exaggerated expenditures, the most pessimistic estimates regarding its construction, should they reach three milliards, are trifles.

The unfortunate war of 1870 cost us much more dear, five milliards of ransom, not counting milliards for military expenses, all absolutely unproductive.

Though the political management has secured alliances in prevision of such or such a struggle, it would be an error to believe that it is enough to add upon paper the naval forces of the allied powers to obtain the value of the total military strength. History is rich in facts that prove the want of cohesion of motley fleets. The influence of preparation for war is great in this as in all other matters, distributing objectives among the allies and even controlling and regulating their actions in case they must later on cooperate in a single enterprise. On June 5, 1905, the English admiral Lord Charles Beresford wrote the following lines which I submit to the meditations of all: "*I hope that a plan will be arranged for the meeting at sea of the British and American fleets with a view to joint manœuvers. Such an experience would be of immense interest for the two navies, no less than for the two nations, and possibly the world would pay great attention to such a phenomenon.*"

In all that precedes I have taken it for granted that the choice of the system of warfare was made from the beginning. Arrived at this point in our studies, I would not even have need to name it, since for us there can only be considered that single one from which efficient results can be expected, warfare in which masses are brought into play. Nevertheless, it is not necessary to reject without consideration other secondary systems, powerless no doubt to assure by themselves alone the aims of the conflict, but which, as adjuncts to war on a large scale, can under some conditions, play an important part. I refer to commerce destroying and to industrial warfare. An example is afforded by the case of a conflict with Germany.

The configuration of that empire's coasts is such that their blockade by a naval force, were it as formidable as that of Great Britain, is by no means a simple operation. The German admiral de Stosch said in 1888: "*The ports of the North Sea defend themselves. If the beacons are removed from the endless sand banks that change form every year, the most skilful pilots would not dare to risk a ship in those tortuous passages.*"

Admiral Hollmann expressed the same opinion in 1897: "*We have no need of a navy for the defence of our coasts, they are their own defence.*"

These very favorable conditions require as their necessary complement secondary operations of such a nature as to force the German fleet to the necessity of leaving its refuges and itself coming to offer battle.

This result would be surely obtained by closing the entrance of the North Sea to the commercial fleet of Germany by a sort of industrial war made at the opening of hostilities, with so many the more chances of success that the respective geographical situations of the countries lend themselves to it very well. Under penalty of his very life, the Emperor of Germany would not be able to bear the sudden shutting off of the commercial stream that daily nourishes his country; she would be able so much the less to accept it that, an agricultural nation prior to 1870 and consequently self-supporting, she has become industrial and commercial and can no longer do without relations with the outside world. Statistics furnish on this subject very convincing lessons. At the beginning of the last century, the agricultural population of Germany formed more than 80 per cent of the total population. In 1870,

the proportion was still greater than 50 per cent; but in 1882 it had already fallen off to 42 per cent, and was no greater than 30 per cent in 1898. The evolution has been as rapid as evident.

The German war fleet would therefore necessarily go out to join battle, and *moreover it is to prepare for this that the Kaiser has given it an impulse towards the offensive.*

And there once more we see an aggregate of preparatory operations the execution of which evidently cannot be left to chance; all their details are settled in time of peace so that on the outbreak of war the cruisers detailed to fall upon the enemy's commerce know the movement of commercial lines and their stopping points as well as the number and quality of the ships en route.

These farsighted arrangements are always the result of preparation for war.

When the plans of operations are settled in all their details—and when I say details I am evidently referring to the broad principles of strategy, since the unexpected of the battlefield cannot be prepared for in advance—it must not be supposed that one is ready for war. The chiefs who have the responsibility of leading to battle squadrons, or it may be single ships, ought to be provided with war orders indicating to them in the most precise manner the objective of the mission confided to them, as well as the *underlying idea* of the orders that are given to them. I insist upon the preceding expression, for too often instructions are buried in interminable phrases relative to unimportant details, without the motives of the action ordered or the aim that is proposed to be attained being clearly indicated, and it is important that the chief know these in order to insure their good execution.

Above all it is necessary to avoid the vagueness of formulas which envelope with an impenetrable fog the directing *idea.* I shall never forget, in this connection, the impression which was made upon me as a young officer, in the far off time when I was on night guard at the Mourillon arsenal, at Toulon, by reading on the order board this terse phrase: *"In case of fire, the sentinels redouble their vigilance."* This comes into my mind because, at a critical period of our contemporary naval history, a lucky chance brought to light the fact that certain instructions of war time yield nothing in the matter of triviality to the foregoing instructions in case of fire. The wording of war instructions ought to be brief, clear and precise.

MOBILIZATION.

I have made the most of the important place that concentration of the forces occupies in the work of preparation for war; but I have assumed, in that very way, that all those forces were ready for action. Such is not the case; since, for financial, economic and even military reasons, it is impossible to keep the forces continually on a war footing. An important fraction finds itself in the position of reserve during the period of peace. The passage of this class of forces from the position of reserve to that of complete armament is the first act of the period of political tension immediately preceding hostilities or even indistinguishable from them. The powerful interest attached to "mobilization" in the case of land forces is well known. It is no less great in the case of fleets, and the mobilization of the naval reserves is still more complicated perhaps, since here a very important and delicate material is concerned besides the personnel.

It is enough to observe, as evidenced by recent occurrences, the suddenness with which modern wars break out to feel with what care all the stages of this mobilization, as regards material as well as personnel, require to be settled during peace time, so that, at the first signal, the units in reserve may be armed without damage or shock, with the maximum of activity in the minimum of time. It is easily understood that the unexpected cannot play any part in this operation; and, in fact, naval mobilization is one of the most delicate tasks, if not the most delicate, of preparation for war.

It is not enough that measures are so taken that, in time of peace, the modern ships in reserve are kept in good condition and lose not the least part of their military value; that they have accordingly, *always in full complement*, the personnel of all the special branches required for their proper maintenance; that this personnel retains all its military training. It is further necessary that the rest of the personnel, required to put the crews on a war footing, join their respective ships rapidly and surely.

The prompt mobilization of all the forces available for fighting is, it cannot be too often repeated, the decisive act of the preparation for war. On no account, therefore can strategy neglect it, and it is for that reason also that all measures regarding the organization of the personnel are the immediate concern of strategy. This essential truth once recognized, it is immediately perceived that all the much discussed and often vexatious questions con-

cerning this personnel take on a character of simplicity and at the same time of importance which enforces reasonable solutions. It is no longer asked, in short, if such an organization of mechanicians, of gunners or of torpedo men, considered apart, would be superior to such another, if the school of gunners is better placed on an old hulk than on a modern battleship, or whether the torpedo school ought to profit by changing from a battleship to a shore station; each of these questions, interesting in itself, is of very little importance in the aggregate, and all ought to be regarded from the view-point of preparation for war, so that their solutions may form a homogeneous structure in which all differences are merged.

Henceforth, when the constitution and organization of the naval personnel are to be studied, and it is the province of strategy alone to determine them, the military objective must be taken as the sole guide.

COMBINED OPERATIONS.

Preparation for war has further in its province the study, in concert with the military authority, of combined operations. The transportation by sea of an expeditionary force and its disembarkation on a hostile shore, particularly if an important army is concerned, have always been very difficult undertakings which under no conditions lend themselves to improvisation. The navy plays in them the important part, first through the preliminary task that it ought to fulfil of suppressing the adverse naval forces and assuring freedom of the sea, then through its responsibility of guaranteeing the expedition against dangers of the sea, of getting ready to land the troops with their material, and finally of maintaining the permanent connection of the army with the bases of operations beyond the sea.

So vast a program evidently can only be executed by means of a close collaboration of all the services concerned.

The two General Staffs, army and navy, should in advance, and with calm reflection, examine and solve all the points of this immense problem; designation of the objectives, evaluation of the military forces necessary to secure at a given point the desired military effect, determination of the number and size of transports, packets or freighters that are to serve to carry the expeditionary army, choice of the points of assembly of the troops for

embarkation and of the port of concentration where the convoy is to form, discussion of the point or points favorable for disembarkation and choice between them, orders of sailing and of convoy, reconnaissance and clearing of the landing places by the naval forces, preparation of the special material for the disembarkation, orders for that disembarkation, etc. I could add more, and more important things.

I will merely mention that another constant care among the first cares in war ought to be to secure a *perfect* knowledge of the material and moral resources of the adversary. *Force* in war is always relative and grows with the weakness of the enemy as well as with its own strength. If the General Staff endeavors to discover the weak points of every nature in the hostile organization, it is also the imperious duty of every commander-in-chief to inform himself in regard to the temperament, character, qualifications and defects of the chiefs of the hostile squadrons that will be opposed to those that he directs.

CONCLUSIONS.

I wish that all that precedes could make others feel as strongly as I do myself what a gigantic labor preparation for war really is; I have been able only to broadly outline the rational method outside of which everything is but fantasy and expedient. But what my pen has been powerless to express, because it is rather something to be divined, is the importance of time in this labor as patient and persevering as an ant's, and the great value of method in constructing that network of close meshes whose every thread is renewed in proportion as it wears without disturbing the general harmony.

This magnificent work, that I have necessarily had to present bit by bit, appears so much the vaster as its details are brought out, it cannot therefore be the work of a day; it requires the devotion of a man's whole life, and the efforts of all together are not too much to bring it to a good conclusion.

The task, already so heavy, is complicated by a financial problem conjoined with the technical problem. In short, war must always be prepared for with limited resources; strategy finds its true justification in the search for success with restricted means. Were it only from the financial point of view, the method of hasty improvisation and of trusting to luck which consists of procuring

things of prime necessity only when a pressing danger, or a threat or war, arises, is absolutely detestable. The millions spent in a few days, as too often we have had to do in the purchase of materials of mobilization and of service, supplies, etc., are very badly utilized, for one is obliged to take whatever is for sale. Nothing, I continue to repeat, can take the place of the methodical, laborious, slow preparatory work of the time of peace; that alone can do a lasting work. It is not merely in the particular case just considered that preparation for war avoids financial waste; it is economical in its principle. It will be enough, in order to give an irrefutable proof of this, to recall that the war of 1898 cost Spain 300,000,000 pesetas and that that of 1904 cost 4,495,000,000 francs to Russia, not including the expenditures on requisitions of the commanders-in-chief that are not yet known. These sums are out of all proportion with those that a sufficient prior military effort would have required. This new proof would suffice by itself alone to demonstrate that good strategy demands preparation for war.

And the same thing is true of tactics. Until now I have neglected to mention the rôle of the commander-in-chief; by giving to him perfect tools, full and trained crews, clear and precise instructions and a clearly designated aim, the service which has prepared for war has done its work; his own then begins. More exactly it has already begun, since it is not at the moment when the battle opens that the chief ought first to exhibit his personal influence. In the preparatory exercises of peace times he should have endeavored to instil into the very souls of all his subordinates the most active element of moral force, confidence; by his personal action, by his professional ability, above all by his *character*, and finally by his activity, he should have inspired the hearts of all with the certainty of victory. Finally he should have made his military plan known sufficiently for his subordinates, on the field of action, to be inspired by it, and to all act together to a common end. And all this is still preparation for war.

That is not yet all. From the top to the bottom of the military hierarchy, among the officers as well as among the men, each in his own sphere ought to be fully conscious of the greatness of his responsibility. Of all moral forces the most effective in war comes from the turning of all individual wills towards a common ideal of national glory and beauty.

Allow me in this connection, to recall a personal memory as lively after the lapse of thirty-five years as on the first day. I was still very young at the time of the terrible year, but yet I was of the age when strong emotions leave an ineffaceable impression on the soul, and I see again the scene as if it were of yesterday. In a great place, before the town hall, is packed an agonized crowd of old men, of women and of children, listening to news from the theater of war read from the balcony by a government official.

In the text of an official telegram, whose phrases resemble the dry crackling of musketry, three words sound forth like a knell of death: "Metz has surrendered!" And from that crowd, over which I felt pass the shiver of a great despair, arises a long cry, as of a wounded beast, of grief and rage at betrayal.

And, in fact, it is truly a whole present and past of betrayals that those three words symbolize.

By this I do not merely point to the crime of treason committed by a traitor general, delivering over to the enemy a formidable fortress, and, worse still, a whole active army. I allude especially to that immense aggregate of betrayals in small things, conscious or unconscious, the apathy of some, the carelessness of others, the idleness and indifference of the greater number, the tendency of many to put off till tomorrow what can be done to-day, or to deny dangers because the happiness of days of ease would be vexed by them, to all those passive resistances, so much the more harmful as they are invisible in the mass and which reduce to a minimum the efficiency of the machine. But the machine with which we are busy is preparation for war, that is to say strategy, that is to say tactics, in short, war and the country's safety. These accumulated partial betrayals were the real cause of the disaster of 1870.

It depends therefore upon the humblest servants of the country in the navy, and particularly upon the officers, whether these frictions are to be suppressed; to accomplish it needs only that each person, whatever his function, have his mind constantly bent upon the object, with the sentiment that even the apparently most insignificant gear wheel is indispensable to the efficient working of the whole machine. And, by so doing, each will co-operate in the preparation for war.

I have now come to the end of the chapter on preparation, and with it we close also the book of *basic principles.*

Throughout this book I have tried to bring out a small number of fundamental principles without which victory cannot be hoped for, and among them the one we have last considered dominates all the others with its extraordinary influence. The latin proverb is truer now than ever before! Only strong nations are assured of peace. Thus, in seeking to sum up the teaching of these ten chapters on basic principles in a sort of brief formula like a "Garde à vous," which, at every moment of our career, shall imperiously declare *this* basic principle, I find no better one than: "Metz has surrendered." Remember it!

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

CLOSING EVENTS OF THE WAR WITH TRIPOLI, 1804-1805.

McMASTER'S ACCOUNT COMPARED WITH OFFICIAL RECORDS AND WITH OTHER RELIABLE AUTHORITIES.

By ROBERT S. RODGERS.

In the year 1804 the United States government organized and sent to the Mediterranean Sea a reinforcing squadron of vessels under command of Commodore Samuel Barron, for the purpose of continuing the operations which, then for some time, had been carried on against Tripoli, by Commodore Edward Preble. By reason of his seniority in rank Commodore Barron, on his arrival in the Mediterranean with this squadron, superseded Commodore Preble.

In a letter dated May 22, 1804, the Secretary of the Navy wrote Commodore Preble, expressing in the warmest terms, the government's high appreciation of the energy and success with which he had conducted the war, and explaining the circumstances which had rendered it necessary to deprive him of the command. The Secretary said: "The only captains in the country junior to yourself are Captains James Barron and H. G. Campbell; and as the frigates cannot be commanded but by captains (agreeably to law), we of necessity have been obliged to send out two gentlemen senior to yourself in commission."—*Goldsborough's Naval Chronicle*, p. 246. (*United States Naval Chronicle.* By Charles W. Goldsborough. Washington, 1824.)

In the new squadron were the following frigates: *President*, flagship of Commodore Samuel Barron; *Congress*, Captain John Rodgers; *Essex*, Captain James Barron (a brother of the Commander-in-Chief. *New International Enc.*, Vol. II, p. 513); *Constellation*, Captain H. G. Campbell.—*Goldsborough's Naval Chronicle*, p. 263.

These four frigates sailed from Hampton Roads July 4, 1804. The *John Adams,* Captain Isaac Chauncey, had preceded them on June 26. (Ibid, 262.)

In "A History of the People of the United States from the Revolution to the Civil War," by John Bach McMaster, that author undertakes, in passing, to give some account of the war with Tripoli. Concerning the organization of this squadron under Commodore Samuel Barron, he has this to say:

> Thus provided with money and authority, the President ordered four more frigates to be put in commission and sent, as soon as they were ready, to Africa. For the command he chose Commodore *James Barron,* and instructed him to carry out as Navy Agent, William Eaton, one of the most remarkable of that interesting class of adventurers to whom our country owes so much.—*McMaster,* Vol. III, p. 204.

It will be noted that the author of the foregoing statement places James Barron in command of this squadron. He makes no reference to James Barron's brother Samuel, who, in fact, was the Commander-in-Chief. As already seen, Captain James Barron commanded a ship (the *Essex*) in his brother's squadron. Some years later the name of James Barron came prominently before the public as the commander of the United States frigate *Chesapeake,* in the affair with the British ship *Leopard;* and still later, as one of the principals in the duel which resulted in the death of Commodore Stephen Decatur. One searches in vain for some reference to Samuel Barron in McMaster's work, in which he is wholly confused with James Barron.—See *McMaster,* Vol. III, Index.

It is true, however, as stated in McMaster's account, that with the squadron went William Eaton, Navy Agent. Of Eaton, Henry Adams in his "History of the United States," says:

> Born in 1764, Eaton had led a checkered career. At nineteen he was a sergeant in the Revolutionary army. After the peace, he persisted, against harassing difficulties, in obtaining what was then thought a classical education; in his twenty-seventh year he took a degree at Dartmouth. He next opened a school in Windsor, Vermont, and was chosen clerk to the Vermont Legislature. Senator Bradley, in 1792, procured for him a captain's commission in the United States Army. His career in the service was varied by insubordination, disobedience to orders, charges, countercharges, a court-martial and a sentence of suspension not confirmed by the Secretary of War. In 1797 he was sent as consul to Tunis, where he remained until the outbreak of the war with Tripoli, in 1801. Tunis was the nearest neighbor of Tripoli, about four hundred miles away; and the consul held a position of much delicacy and importance. In the year 1801

an elder brother of the reigning Pacha of Tripoli resided in Tunis, and to him Eaton turned in the hope of using his services. This man, Hamet Caramelli, the rightful Pacha of Tripoli, had been driven into exile some eight or nine years before by a rebellion which placed his younger brother Yussuf on the throne. Eaton conceived the idea of restoring Hamet, and by this act of strength impressing all the Mahometan Powers with terror of the United States. In pursuit of this plan he spent more than twenty thousand dollars, embroiled himself with the Bey of Tunis, quarreled with the naval commanders and in 1803 returned to America to lay his case before the President and Congress.—*Adams' History of the United States 1801-1805*, Vol. II, p. 429.

When Eaton returned to the Mediterranean with Barron's squadron, he bore a commission as "Agent of the Navy Department of the United States of America for the several Barbary regencies."—*State Papers*, Vol. V, p. 163.[1]

Thomas Jefferson was President, James Madison was Secretary of State and Robert Smith, Secretary of the Navy. Concerning Eaton the orders given Commodore Barron on June 6, 1804 by the Secretary of the Navy were as follows:

With respect to the Ex-Pasha of Tripoli, we have no objection to your availing yourself of his co-operation with you against Tripoli, if you shall, upon full view of the subject after your arrival upon the station, consider his co-operation expedient. The subject is committed entirely to your discretion. In such an event you will, it is believed, find Mr. Eaton extremely useful to you. Colonel Tobias Lear, our Consul General at Algiers, is invested by the President with full power and authority to negotiate a treaty of peace with the Pasha of Tripoli, and also to adjust such terms of conciliation as may be found necessary with any of the other Barbary powers. He is, therefore, to be conveyed by you to any of these regencies as he may request of you, and you will cordially co-operate with him in all such measures as may be deemed the best calculated to effectuate a termination of the war with Tripoli, and to ensure a continuance of the friendship and respect of the other Barbary powers.—*State Papers*, Vol. V, p. 164.

To Tobias Lear the Secretary of State wrote on June 6, 1804:

Of the co-operation of the elder brother of the Pasha of Tripoli, we are still willing to avail ourselves, if the Commodore should judge that it may be useful, and to engage which, as well as to render it more effectual, he has discretionary authority to grant him pecuniary or other subsidies *not exceeding twenty thousand dollars.*—*State Papers*, Vol. V, p. 434.

[1] *State Papers and Public Documents of the United States*, published by T. B. Wait & Sons, Boston, 1817. (Second Edition.) For same documents, see also Lowrie & Clarke's *American State Papers, Foreign Relations*, Vol. II, page 695, et seq., Washington, 1832. Also *Annals of Congress*, being Debates and Proceedings of the Congress of the United States, Washington. Printed and published by Gales & Seaton, 1852, 9th Congress, 2d sess., p. 694.

To Eaton, the Secretary of the Navy, in forwarding to him his commission as Navy Agent, wrote:

You will receive instructions from, and obey the orders of Commodore Barron; and will render to our squadron in the Mediterranean every assistance in your power.—*State Papers,* Vol. V, p. 163.

Of his instructions Eaton himself said, in a private letter:

I am ordered on the expedition by Secretary Smith, who, by the bye, is as much of a gentleman and a soldier as his relation with the administration will suffer, without any special instructions to regulate my conduct; without even a letter to the ally to whom I am directed; without anything whatever said to the Commander-in-Chief on the subject of supplies; nothing but a general and vague discretion concerning the co-operation, and nothing more to him of my agency in the affair than that "Mr. Eaton is our agent for the several Barbary Regencies and will be extremely useful."—*Life of William Eaton,* Brookfield, 1813, p. 266.[2]

Hamet, the elder brother of the reigning Pasha of Tripoli, had, in the meantime, accepted from the latter the governorship of Derne, from which place, after having been defeated in a revolt against the reigning Pasha, he had fled to Egypt, where he had joined the Mamelukes then in a rebellion against the Turkish government. (*Our Navy and the Barbary Corsairs,* by G. W. Allen, Boston, 1905, p. 227.)

After the squadron under Barron reached the Mediterranean, Eaton, acting under Barron's orders, proceeded to Egypt in the brig *Argus* (Captain Isaac Hull) in search of Hamet. Barron's written orders to Hull, dated September 13, 1804, were that he should proceed to Alexandria for the purpose of convoying to Malta any American merchant vessels that he might find in need of such protection.—*State Papers,* Vol. V, p. 164. At the same time, however, certain verbal orders were given to Hull by Barron, which were reduced to writing and attested by Hull and Eaton. These orders, as so reduced to writing, were as follows:

Verbal orders of Commodore Barron to Captain Hull, of the United States Brig *Argus,* in presence of the undersigned, on board the *President,* September 15, 1804.

Sir: The written orders I here hand you, to proceed to the port of Alexandria or Smyrna, for convoying to Malta any vessels you may find there, are intended to disguise the real object of your expedition, which is to proceed with Mr. Eaton to Alexandria, in search of Hamet Pasha, the rival brother and legitimate sovereign of the reigning Pasha of Tripoli; and to convey him and his suite to Derne, or such other place on the coast

[2] *Life of the late Gen. William Eaton, principally collected from his correspondence and other manuscripts,* Brookfield, 1813.

as may be determined the most proper for co-operating with the naval force under my command, against the common enemy; or, if more agreeable to him, to bring him to me before Tripoli.

Should Hamet Pasha not be found at Alexandria, you have the discretion to proceed to any other place for him, where the safety of your ship can be, in your opinion relied upon.

The Pasha may be assured of the support of my squadron at Bengazi or Derne, where you are at liberty to put in, if required, and if it can be done without too great risk. And you may assure him also, that I will take the most effectual measures with the forces under my command for co-operating with him against the usurper, his brother, and for re-establishing him in the regency of Tripoli. Arrangements to this effect are confided to the discretion with which Mr. Eaton is vested by the government.

Attest, Isaac Hull,
William Eaton.

—*State Papers*, Vol. V, p. 165.

Arriving in Egypt, Eaton found that Hamet was with the Mamelukes, besieged by the viceroy's troops in the village of Minieh in Upper Egypt.—Letter of Eaton to Secretary of the Navy, *Life of Eaton*, p. 280. Eaton succeeded in separating Hamet from the Mamelukes and, after getting him to Alexandria, it was decided to march the expedition overland to Derne. It was arranged that Hull should meet them with the *Argus* at Bomba with reinforcements and supplies. Hull, therefore, sailed for Malta (where Commodore Barron then was) with a letter from Eaton to Barron, dated February 14, 1805. In this letter Eaton outlined a "convention" between the United States and Hamet, which had been agreed upon between himself and Hamet, but which had not then been reduced to writing. On February 23, 1805, this convention was formally entered into between the United States "and his Highness Hamet Caramanly, Pasha of Tripoli," Eaton assuming to act as negotiator on behalf of the United States. The convention contained fourteen articles and an added "secret" article. The following are some of the articles:

ARTICLE I.

There shall be a firm and perpetual peace and free intercourse between the government of the United States of America, and His Highness Hamet Caramanly, Pasha, the legitimate sovereign of the Kingdom of Tripoli, and between the citizens of the one and the subjects of the other.

ARTICLE II.

The government of the United States shall use their utmost exertions, so far as comports with their own honor and interest, their subsisting treaties, and the acknowledged laws of nations, to re-establish the said Hamet Pasha in the possession of his sovereignty of Tripoli, against the

pretentions of Joseph Pasha, who obtained said sovereignty by treason and who now holds it by usurpation, and who is engaged in actual warfare against the United States.

ARTICLE III.

The United States shall, as circumstances may require, in addition to the operations they are carrying on by sea, furnish the said Hamet Pasha on loan, supplies of cash, ammunition and provisions, and if necessity require, debarkations of troops, also to aid and give effect to the operations of said Hamet Pasha against the common enemy.

Among the other articles, the eighth provided that:

The better to give effect to the operations to be carried on by land in the prosecution of the plan, and the attainment of the object pointed out by this convention, William Eaton, a citizen of the United States, now in Egypt, shall be recognized as general and commander-in-chief of the land forces which are or may be called into service against the common enemy. And his highness Hamet Pasha engages that his own subjects shall respect and obey him as such.

Article twelve purported to be a stipulation on behalf of Commodore Barron and was as follows:

In case of the faithful observance and fulfillment on the part of his highness, said Hamet Pasha, of the agreements and obligations herein stipulated, the said Commander-in-Chief of the American forces in the Mediterranean engages to leave said Hamet Pasha in the peaceable possession of the city and regency of Tripoli, without dismantling its batteries.

Article fourteen provided that:

This convention shall be submitted to the President of the United States for his ratification. In the mean time there shall be no suspense of its operations.

The convention was signed by Hamet for himself and "by William Eaton on the part of the United States," at Alexandria.—*State Papers,* Vol. V, pp. 167-175.

Eaton was clearly without authority to negotiate this or any other treaty; especially, in view of the fact that Tobias Lear bore a commission from the government to negotiate a treaty of peace with the reigning Pasha.

In the early part of March, 1805, the army of Hamet and Eaton was organized about forty miles west of Alexandria. This army is thus described by Eaton in his journal:

March 8. Arranged our caravan and organized our force, which now consisted of nine Americans, including Lieutenant O'Bannon and Mr. Peck, a non-commissioned officer and six private marines; a company of twenty-five cannoniers, commanded by Selim Comb, and Lieutenants Connant and Rocco, and a company of thirty-eight Greeks, commanded by

Capt. Luco Ulovix and Lieutenant Constantine. The Pasha's suite consisted of about ninety men, including those who came from Fiaume and those who joined him since his arrival at Alexandria. These, together with a party of Arab cavalry under orders of the Cheiks il Taiib and Mahamet, and including the footmen and camel drivers, made our whole number about four hundred. Our caravan consisted of one hundred and seven camels and a few asses.—*Life of Eaton*, p. 303.

McMaster says:

He collected troops, camels, stores, and in March, 1805, began his journey across the Libyan desert for Derne. With him went marines and cannoneers from the American ships, Christians from every part of the earth, Greeks, Turks, Barbary Arabs, camel-drivers, in all, some five hundred men with one hundred and seven camels and a few asses. Such another motley horde never went forth to war.—*McMaster*, Vol. II, pp. 206-207.

Of these forces Eaton was "General and Commander-in-Chief" by virtue of the provisions of Article VIII of his convention between the United States and Hamet, already mentioned. The expedition was afterwards joined by additional bands of Arabs so that by April 2 they had, according to Eaton's journal, between "Six and seven hundred fighting men on the ground exclusive of followers of the camp and Beduoin families, who inclusively make a body of about twelve hundred people."—*Life of Eaton*, p. 317.

Hamet himself was wholly without resources. Such slender following as he had, was of the description shown by the foregoing account. He himself was of a weak and irresolute character, as was proven by repeated incidents during the march to Bomba, related by Eaton in his journal. (*Life of Eaton*, p. 303, et seq.) On March 10, Eaton wrote in his journal:

The camel drivers and footmen who followed the horses revolted and made a stand. The Cheik il Taiib had insinuated a suspicion among them that if they performed their services before being paid, the Christians would be apt to defraud them. The Pasha seemed irresolute and despondent.

March 26. A courier from Derne, in the interest of the Pasha, brings intelligence that five hundred of Joseph Pasha's cavalry, accompanied by great numbers of Arabs, both horse and foot, were a few days' march from that place and would certainly arrive before it would be possible that we could. The alarm excited by this information arrested our motions. The Pasha seemed to hesitate whether to proceed farther. The camel drivers fled with their caravan; and there seemed to be a combination among the Pasha's people and the Arabs of Behara to return to Fiaume.

March 28. I perceived a manifest reluctance in the Pasha to advance

and evident calculations for a retrograde march. Joseph Pasha's forces had seized on all his nerves. He now took from my officers the horses he had given them for the passage through the desert, and gave them to some of his footmen. Drew off his Mahometans, and stood balancing, after the troops were drawn up for the march. I reproached him with indecision, want of perseverance and of consistency in arrangement. I demanded the horses for my officers. High words ensued. I ordered the march in front. The Pasha retrograded. We proceeded in front with the baggage. The Pasha came up in about two hours; and, making us some compliments for our firmness, said, he was obliged to dissemble an acquiescence in the wishes of his people to render them manageable.

On April 8, according to Eaton, "At 3 p. m. the Pasha, compelled by his Arab host, struck his tent, ordered his baggage packed, mounted and took up a march for Fiaume by the mountain. I waited without emotion the result of this movement; not choosing to betray a concern for ourselves. Discovering, however, an intention in the Arabs to seize our provisions, I beat to arms. My Christians formed a line in front of the magazine tent. Each party held an opposite position the space of an hour. The Pasha prevailed upon the Arabs to return; they dismounted; and he pitched his tent. Supposing the tumult tranquilized, I ordered the troops to pass the manual exercise, according to our daily practice. In an instant the Arabs took an alarm; remounted and exclaimed, 'the Christians are preparing to fire on us!' The Pasha mounted and put himself at their head, apparently impressed with the same apprehension. A body of about two hundred advanced in full charge upon our people, who stood their ground motionless. The enemy withdrew at a small distance, singled out the officers, and, with deliberate aim cried, 'fire!' Some of the Pasha's officers exclaimed 'for God's sake do not fire. The Christians are our friends!' Mr. O'Bannon, Mr. Peck and young Farquhar stood firmly by me. Selem Aga (Captain of cannoneers), his lieutenants and the two Greek officers, remained steadfast at their posts. The others were agitated and in fact abandoned us. I advanced towards the Pasha and cautioned him against giving countenance to a desperate act. At once a column of muskets were aimed at my breast. The Pasha was distracted. A universal clamor drowned my voice. I waived my hand as a signal for attention. At this critical moment some of the Pasha's officers and sundry Arab chiefs rode between us with drawn sabers and repelled the mutineers. I reproached the Pasha for his rashness or rather weakness. His Casnadar asked him if he was in his senses. The Pasha struck him with his naked saber. The fracas had nearly resumed its rage, when I took the Pasha by the arm; led him from the crowd and asked him if he knew his own interests and his friends. He relented: called me his friend and protector; said he was too soon heated; and followed me to my tent, giving orders at the same time to his Arabs to disperse. After a moment's breath, he said if I would give orders to issue rice it would quiet everything."

On April 15 the expedition reached Bomba. On the 16th the *Argus* put in sight off that place. On the 17th the sloop *Hornet*

arrived with provisions. The march was continued on the 23d toward Derne. On the 24th Eaton wrote in his journal that:

Certain information came to us here that the governor of the country had fortified himself and was determined to defend the city against our approach. The same courier confirmed the intelligence which had frequently before been stated to us that the army of Joseph Pasha, which he had sent out for the defense of the province, were near Derne, and would probably, by a forced march arrive before us, especially if we waited the return of our vessels to the coast, which had been blown off in the gale of the 23d. Alarm and consternation seized the Arab chiefs; and despondency the Pasha. The night was passed in consultation among them at which I was not admitted.

On April 25 the expedition arrived in sight of Derne (about six hundred miles from Tripoli) and heard of preparations made in the town to resist attack, also that Joseph Pasha's army was near at hand, and Eaton entered in his journal:

I thought the Pasha wished himself back to Egypt.—*Life of Eaton*, p. 330.

On April 27, with the aid of the guns of three ships from the squadron (the *Argus*, the *Hornet* and the *Nautilus*) Eaton attacked the town. The battery of the town was silenced by the fire from the ships in three quarters of an hour. (Eaton's Journal. *Life of Eaton*, p. 338.) The enemy then concentrated in superior numbers to oppose Eaton and his handful of Christians. He charged and the enemy fled. O'Bannon with the marines and Greeks and a few cannoneers, made a rush for the battery, got possession of it and turned the guns upon the town, which was captured after an action of two hours and a half, during which Eaton received a wound in the wrist. The fighting on shore appears to have been done by Eaton and his Christian force, among whom the casualties were one killed and thirteen wounded. Of the Arabs in this affair, Eaton afterwards wrote Barron, "they have held safe positions to catch fugitives, until the doors of the enemy were opened for plunder, when they became at once brave and impetuous." Hamet himself seems to have done little. He, however, promptly took possession of the governor's palace after the way had been opened.—Eaton's Journal, *Life of Eaton*, p. 339.

No one can wish to deny to Eaton the credit due him for his persistency in holding together the rabble that followed him and restraining his ally, Hamet, from fleeing back toward Egypt at every rumor of an approaching enemy, in the long march across

the desert; nor is Eaton's gallantry displayed in the attack on Derne to be questioned. But opinions may differ as to the advantages which could have been gained by the United States by forcibly placing upon the throne of Tripoli a man as weak, timid and incapable as Hamet had shown himself to be, and then entering into a treaty with him or attempting to rely upon any prearranged treaty. The throne of such a prince would, without doubt, have tottered and collapsed as soon as the support of the United States had been withdrawn, and the treaty would have proved valueless. Whether the United States government was then in a position to engage in the enterprise of setting up a foreign ruler and maintaining him in power, in a remote country, might be thought by some, a question worthy of consideration in reviewing these events. The government had no such purpose in view, and Lear was required to negotiate with the reigning Pasha when the proper time should, in Barron's opinion, arrive.

It appears that Commodore Samuel Barron entertained certain well defined views as to these matters, as will appear from his letters to Eaton, hereafter set out with considerable fullness.

The limit of Eaton's discretionary authority so far as concerned the furnishing of money and supplies in support of Hamet's co-operation, appears in the letter of the Secretary of State to Tobias Lear, Consul General at Algiers, of June 6, 1804, already quoted, in which he said:

> Of the co-operation of the elder brother of the Pasha of Tripoli, we are still willing to avail ourselves, if the Commodore should judge that it may be useful, and to engage which, as well as to render it more effectual, he has discretionary authority to grant him pecuniary or other subsidies *not exceeding twenty thousand dollars.*—*State Papers,* Vol. V, p. 434.

On February 13, 1805, Eaton writing from Alexandria to the Secretary of the Navy, said:

> I calculate the whole expenditure of cash in this expedition, including expenses in Egypt, will amount to twenty thousand dollars. Further disbursements and supplies will be necessary to carry this plan into final effect. But to indemnify the United States, I have entered into a convention with Hamet Pasha, to pledge the tribute of Sweden, Denmark, and the Batavian Republic; which convention I shall reduce to writing and forward by Captain Hull, if time permit; otherwise by the earliest occasion. —*State Papers,* Vol. V, p. 168.

To Barron on February 14 he wrote:

> By the time we shall have arrived at Bomba, I shall have disbursed about 10,000 dollars which we have taken up on credit of Messrs. Briggs and

Brothers, 4000 dollars of which sum Captain Hull has drawn bills on Malta and London; the balance we have promised shall be sent up in one of the small vessels. Ten thousand dollars more at least will be necessary to accomplish our views on Derne and Bengazi. *The Pasha assures me he will be able immediately to refund these sums when established in those provinces.*—*State Papers*, Vol. V, p. 170.

After reaching Derne, in a letter to Barron written April 29, 1805, Eaton argued as follows:

It was understood when government came to a determination to try the effect of a co-operation with Hamet Pasha, against the enemy, that provision would be made, adequate to the experiment; six field-pieces, a thousand stand of arms, with suitable ammunition, and eighty thousand dollars, were asked for by Hamet Pasha, while yet in possession of this province, and gaining ground against the usurper. The Secretary of the Navy informed me that the arms, ammunition and fifty thousand dollars would be furnished, and they were to have been put on board at Hampton Roads, while the squadron were getting ready for sea. Information arrived of the Pasha having been driven from his post and retired to Egypt. *In consequence of which it is to be presumed the supplies getting in readiness were withheld, as the success of the experiment then appeared very doubtful.* The twenty thousand dollars deposited with the consul general at Algiers, to be applied to this service, cannot be supposed adequate to the purpose of bringing the Pasha from his exile in Egypt, placing him in a situation to act against a rival, possessed of all the resources of his kingdom, and carrying his plan of operations into effect, whatever may have been the dispositions of the people towards him. The twenty thousand dollars, therefore, could have been meant only to assist the research of the Pasha, and the revival of his affairs in case our plan should be thought feasible.—*State Papers*, Vol. V, p. 182.

And in the same letter Eaton states:

The expenses already incurred in this expedition will amount to nearly *thirty thousand dollars.*

When Commodore Barron received Eaton's letter of February 14, outlining the convention with Hamet, which then only remained to be reduced to writing and signed, he wrote Eaton a letter from Malta on March 22 in which he said:

It is far from my wish, sir, to damp your ardour, or that of your companions in arms, by laying too great a stress upon the cold maxims of prudence, whereby the tide of success is often lost; something, I am aware, should always be left to fortune, in enterprizes of this nature; but I must own there are certain things, expressed in your despatches, which, when brought to the test of my instructions from home, give birth to feelings of doubt and uneasiness: these I deem it incumbent on me to point out to you with candour and explicitness, in order that we may be fully understood. You must be sensible that in giving their sanction to a co-

operation with the exiled Pasha, government did not contemplate the measure as leading, necessarily and absolutely, to a reinstatement of that prince in his rights on the regency of Tripoli. They appear to have viewed the co-operation in question, as a means which, if there existed energy and enterprise in the exile, and attachment to his person on the part of his former subjects, might be employed to the common furtherance and advantage of his claims and our cause, but without meaning to fetter themselves by any specific and definite attainment as an end, which the tenour of my instructions, and the limited sum appropriated for that special purpose, clearly demonstrate. I fear by the convention you were about to enter into with Hamet, and by the complexion of other measures, that a wider range may have been taken than is consistent with the powers vested in me for that particular object. These apprehensions may, perhaps, prove groundless, on further representations from you; but under my present impressions, I feel it my duty to state, explicitly, that I must withhold my sanction to any convention or agreement committing the United States, or tending to impress upon Hamet Pasha a conviction that we have bound ourselves to place him upon the throne. The consequences involved in such an engagement cannot but strike you forcibly, and a general view of our situation, in relation to the reigning pasha and our unfortunate countrymen in Tripoli, will be sufficient to mark its inexpediency. I shall consider it my duty, as it is certainly my inclination, to afford you every aid compatible with the authority vested in me, and commensurate with the means which have been placed at my disposal, and you may rely on the most active and vigorous support from the squadron, as soon as the season and our arrangements will permit us to appear in force before the enemy's walls; but I wish you to understand that no guarantee or engagement to the exiled prince, whose cause, I must repeat, we are only favoring as an instrument to our advantage, and not as an end in itself, must be held to stand in the way of our acquiescence to any honourable and advantageous terms of accommodation which the reigning Pasha may be induced to propose: *such terms being once offered, and accepted by the representative of government appointed to treat of peace, our support to the ex-Pasha must necessarily cease.* You will not, however, conceive that these considerations, important and necessary as they are, ought to induce us at once to abandon the benefits which the measures you have adopted seem to promise. I conceive a perseverance in these by no means incompatible with a total freedom from any trammels with respect to a definite object, which freedom I deem it all important to preserve, especially when I view the peculiar situation in which Captain Bainbridge and his fellow sufferers may be placed by this co-operation. If, by your energy and exertions, added to the supplies now sent forward, you succeed in getting possession of Derne and Bengazi, we may calculate, that, having received this impulse from our strength, the Pasha will, himself, possess sufficient energy, courage, and talents, and if accounts are correct, sufficient interest among the people, to move on with firm steps, and to conduct his friends and followers to the gates of Tripoli. Every support will, of course, be given to him by a systematic union of operations with the squadron, so

as to enable him to get in the rear of the town; but should he be found deficient in those qualities, or that it appears we have been deceived in regard to the disposition of the inhabitants, *he must be held as an unfit subject for further support or co-operation.* I beg leave to mention to you, that as we are short of officers, the services of all will be wanted on board the respective ships, as soon as we enter upon offensive measures. Should you conceive, however, that any serious disadvantage may result from withdrawing those with you, I have no objection to their remaining as volunteers; but it is impossible for me to comply with your requisition for one hundred marines to be sent to the coast. Such a step in the present posture of affairs, far exceeds my powers, and, besides, as we are rather short of hands, I could not feel myself justifiable in detaching so considerable a force from the squadron. I have not been unmindful of your requisition for field artillery, which, I think with you, is essential, but here it was impossible to procure it; I therefore despatched, some days since, the *Congress* frigate to Messina, where I hope to obtain four field-pieces complete for service, and as soon as they arrive they will be sent to the coast, with the necessary ammunition. As I am still too unwell to write you with my own hand, I must refer you to Captain Hull, in whose judgment and discretion I have the fullest confidence, for information on several collateral points, and for my sentiments on others. In this letter I have endeavored to explain, as clearly as possible, what are my ideas with respect to the wishes and intentions of our government, and what I feel to be the extent of my authority, relative to the cooperation with Hamet Pasha. I reiterate my fixed resolution to afford you every support and assistance which are consistent with the powers and resources vested in me; adding, at the same time, my dissent from any guarantee, covenant, or engagement, by which the United States may stand committed, to place the exiled prince on the throne, or any condition which militates against the most perfect and uncontrolled power of choice and action, in concluding a pacification with Jussuf Pasha, should he offer terms honourable and advantageous to our country.—*State Papers,* Vol. V, p. 176.

Writing from Derne, on May 1, 1805, to Commodore Barron, Eaton said:

With the aids contemplated by government to have been furnished Hamet Pasha, when in the position he now holds, I have no doubt but he may proceed to the walls of Tripoli. But while I offer this opinion, I cannot conceal my apprehensions, grounded on experience, that when arrived there, he could effect little, *without more military talents and firmness than exists either in himself or the hordes of Arabs who attach themselves to him. They are exactly what Volney describes of the camps of the Egyptian beys, rather a rabble than an army; and in our affair they have held safe positions to catch fugitives, until the doors of the enemy were opened for plunder, when they became at once brave and impetuous.* If, therefore, the co-operation is to be pursued with him, and its direction is to be confided to me, it must be on conviction that detachments of regulars may be occasionally debarked from the squadron, or procured elsewhere, to aid

and give effect to such operations as require energy. With the supplies asked for, provisions for our Christians, and with the firm front of one regular regiment, I believe it would not be presuming too far, to engage, in conjunction with the squadron, to force the enemy to take refuge in a sanctuary.—*State Papers*, Vol. V, pp. 184 and 185.

Acknowledging the receipt of Eaton's letter of May 1, on May 19, 1805, Barron, at Malta, replied as follows:

Sir: By the *Hornet* sloop, which arrived in this harbour on the 16th inst. (having had a tedious passage), I had the honour of receiving your despatches of the 29th ult. and 1st instant, announcing the capture of Derne, after a contest, in which permit me to observe, that your conduct and that of your companions in arms will not discredit the character which our countrymen have established among the nations of Barbary. I have perused with deserved attention the arguments and reasons adduced in your letter of the 1st, on the subject of pursuing the co-operation with Sidi Hamet Pasha. Being myself too weak for the exertion of letter writing, and my secretary writing with difficulty, owing to an inflammation in his eyes, it is impossible for me to enter into a lengthy reply, nor does it indeed appear necessary. THE BUSINESS IS NOW ARRIVED AT THAT POINT, WHERE, IF THE EX-PASHA, AFTER BEING PUT IN POSSESSION OF DERNE, HIS FORMER GOVERNMENT, AND THE DISTRICT IN WHICH HIS INTEREST IS MOST POWERFUL, HAS NOT IN HIMSELF ENERGY AND TALENT, AND IS SO DESTITUTE OF MEANS AND RESOURCES, AS NOT TO BE ABLE TO MOVE ON WITH SUCCESSFUL PROGRESS, SECONDED BY OUR NAVAL FORCE ACTING ON THE COAST, HE MUST BE HELD UNWORTHY OF FURTHER SUPPORT, AND THE CO-OPERATION AS A MEASURE TOO EXPENSIVE AND BURDENSOME, AND TOO LITTLE PREGNANT WITH HOPE OR ADVANTAGE, TO JUSTIFY ITS FURTHER PROSECUTION; FOR WHATEVER, SIR, MAY HAVE BEEN ONCE THE INTENTIONS OF THE GOVERNMENT ON THIS SUBJECT, AND WHATEVER YOUR IDEAS, TOUCHING THOSE INTENTIONS, I FEEL THAT I HAVE ALREADY GONE TO THE FULL EXTENT OF MY AUTHORITY. THE INSTRUCTIONS FROM THE NAVY DEPARTMENT, ON THIS PARTICULAR POINT, WITH WHICH YOU ARE NOT UNACQUAINTED, FALL SHORT OF THAT UNLIMITED DISCRETION AND POWER OF APPLICATION AS RELATES TO FUNDS, INSISTED ON IN YOUR LETTER, AND ARE TOTALLY SILENT IN REGARD TO THE QUANTITY AND DESCRIPTION OF SUPPLIES AND STORES, WHICH YOU MENTION TO HAVE BEEN IN THE CONTEMPLATION OF GOVERNMENT TO FURNISH TO THE PASHA; HENCE YOU WILL BE SENSIBLE, THAT, WITHOUT TAKING A LATITUDE THAT WOULD INVOLVE ME IN A SUM OF RESPONSIBILITY, WHICH IT WERE THE EXTREME OF FOLLY AND RASHNESS TO ENCOUNTER, I CANNOT PROCEED FURTHER. INDEPENDENT OF THIS CONSIDERATION, IT MAY NOT BE IMPROPER TO STATE, THAT I HAVE NOT AT MY DSIPOSAL FUNDS SUFFICIENT TO MEET THE LARGE SUMS, WHICH, ACCORDING TO YOUR CALCULATIONS, WOULD BE REQUIRED TO PURSUE THE PLAN WITH EFFECT. With respect to any engagements to Sidi Hamet, I cannot consider them as binding or definite. We have, by our resources and your valor and enterprise, placed him at the post from which he was driven, when first he solicited the aid and support of our arms, and in the "most valuable province of Tripoli;" in performing which we have, I

conceive, fulfilled every pledge, and that he can neither charge us with bad faith in our engagements, or with injustice to himself. His want of those qualities so essential in the character of a commander, and especially to a prince contending for his throne, is a serious obstacle to the advancement of his cause, not to be surmounted even by the existence and manly exertion of them, in those about his person. But it is what we had no reason to anticipate, and still less to suppose, that, when master of the finest province in his kingdom, where his influence is greatest and his adherents most numerous, his situation would not be materially altered, and himself as destitute of means to carry on the contest, as when he was brought from his exile in Egypt. *In short, sir, the matter reduces itself to this: We are willing and ready to support the Pasha, by a union of operations on the coast, so long as the war with Tripoli continues; but you will state explicitly to his excellency, that our supplies of money, arms and provisions, are at an end, and that he must now depend upon his own resources and exertions. This determination will suggest to you and your comrades that line of conduct most prudent to be adopted in the present posture of affairs.* I have lost no time in despatching the *Hornet* with a supply of provisions, for the crews of the *Argus* and *Nautilus*, and the Christians under your command, and I hope she will arrive in time to prevent your suffering from want.

I HAVE NOW TO ACQUAINT YOU WITH AN OCCURRENCE IN OUR AFFAIRS, INTERESTING IN ITSELF, AND MOMENTOUS AS RELATES TO YOUR SITUATION. IN CONSEQUENCE OF RECENT ADVICES FROM TRIPOLI, I HAVE THOUGHT IT MY DUTY TO STATE TO THE CONSUL GENERAL, COLONEL LEAR (NOW AT THIS PLACE) MY CANDID OPINION THAT THE PRESENT IS A MOMENT HIGHLY FAVORABLE TO TREAT FOR PEACE, AND A COMMUNICATION HAS THIS MOMENT BEEN HANDED ME FROM THAT GENTLEMAN, EXPRESSING HIS DETERMINATION TO MEET THE OVERTURES LATELY MADE BY THE REIGNING PASHA, SO FAR AS TO FOUND ON IT THE COMMENCEMENT OF A NEGOTIATION, AND TO PROCEED TO TRIPOLI IN THE *Essex* FRIGATE, IN THE COURSE OF THIS WEEK. From a variety of concurring circumstances, the present appears to be a period propitious to such a step, and I cannot help indulging sanguine hopes that a very short time will restore Captain Bainbridge and his unfortunate companions to freedom and their country. *It would be useless in me to say anything on the effect which this measure must needs have on your situation and determinations; it is a measure which was anticipated in my letter to you by Captain Hull, and as such, the intelligence of it will not, I presume, reach you unprepared.* The interests of Sidi Hamet will not be overlooked. It is with Colonel Lear's express sanction that I state to you his intention to endeavor at stipulating some conditions for the unfortunate exile, provided this can be done without any considerable sacrifice of national advantage on our part, and without giving up points that are essential.

I have sent by Lieutenant Evans 2000 Spanish dollars, which he is directed to deliver to you or Captain Hull. This sum will serve to extinguish any little engagements you may have contracted at Derne.

I am extremely anxious for further intelligence from you, and remain, with much respect &c.—*State Papers*, Vol. V, p. 191.

Under the same date (May 19, 1805) Commodore Barron dispatched by the sloop *Hornet* (Lieutenant Evans) the following letter to Captain Hull, in command of the *Argus*, then at Derne:

Your several communications were received by the *Hornet*, which did not arrive here until the 16th, having met with head winds and heavy gales.

Your various information is under my particular attention. The state of my health, and my anxiety to despatch the sloop without loss of time, does not allow me to enter into lengthy observations. Nor is it indeed necessary. *The letter I have written to Mr. Eaton, by this conveyance, and which he will communicate to you, will, no doubt, determine him and the officers to leave the coast, as a measure rendered necessary by existing circumstances, and especially by the intention of the consul general to open a negotiation with Jussuf, reigning pasha of Tripoli. You will, therefore, as soon as the requisite arrangements are made, return with the vessels under your command to Syracuse, to which place it is contemplated to transfer head-quarters in the course of a few days.* Lieutenant Evans is instructed to deliver the stores, which have been laden in the sloop, to you, to be distributed according to your discretion. You will understand those stores are intended for the use of the crews of the United States vessels, and the Christians under the command of Mr. Eaton.

Nothing material has occurred in our affairs since your departure. Mr. Evans will be able to inform you of everything worthy of notice. *I have likewise sent with Mr. Evans, two thousand dollars (Spanish) in specie, which will serve to extinguish any individual engagements that you or Mr. Eaton may have contracted at Derne.*

I look anxiously for further intelligence from Derne.—*State Papers*, Vol. V, p. 190.

Throughout this correspondence Barron, who was in ill health, remained at Malta where the headquarters of the squadron had been established. A rigid blockade of the port of Tripoli had been maintained during the winter and spring preliminary to more active operations contemplated for the summer season.

Referring to these letters from Barron to Eaton, and a letter to Lear hereafter alluded to, John Quincy Adams, in the course of a speech in the Senate, afterwards said:

I care not who wrote them; I do not hesitate to say that no official documents presented to the Senate since I have had the honor of a seat in this body, have been stamped with more sterling intrinsic value. The arguments in the letters to Mr. Eaton on the subject of the co-operation with Hamet Pasha and on the subject of Mr. Eaton's measures, are, to my mind, not only substantial, but unanswerable. Those in the letter to Mr. Lear, on the subject of negotiation with the reigning Pasha, are cogent and forcible.—*Annals of Congress*, April 1, 1806.

During the progress of the events shown by the foregoing correspondence, Captain John Rodgers, in command of the frigate

Constitution, had been actively employed under Commodore Barron's orders in the performance of duties having no relation to Eaton's enterprise, at points far removed from the field of his operations; and at the time that Barron, on May 19, 1805, wrote to Eaton and Hull the despatches above given in full, Rodgers, as the senior officer before Tripoli, was in immediate command of the blockading force in front of that place. He had no control or authority over Eaton's movements. Like Eaton, he was under the orders of the Commander-in-Chief of the squadron.—*Goldsborough's Naval Chronicle,* p. 267.

This was the situation when, on May 26, 1805, Tobias Lear, Commissioner of the United States for negotiating peace with Tripoli, appeared off Tripoli on board the *Essex,* at the suggestion of Commodore Barron, for the purpose of opening such negotiations, and placed himself at once in communication with the Pasha through the Spanish Consul at that port. At the same time and by the same ship Rodgers received from Barron a letter surrendering to him the command of the squadron.—*Goldsborough's Naval Chronicle,* p. 268.

The circumstances which had, at this time, deprived the Hamet expedition of further support from the squadron, have already appeared from the correspondence between Barron and Eaton that has been given here. This correspondence tells its own story. McMaster's narrative so far as it purports to tell of events from the date of Eaton's arrival at Bomba to the close of the war is as follows:

> When at last Bomba was reached, not a ship was seen. Then the Arabs grew furious, and had not the *Hornet* and the *Argus* come in with provisions, the situation would have been most serious. After resting and refreshing his men for three days, Eaton pushed on to Derne and stormed it, and for the first time in our history our flag floated over a city of the Old World. Three times the reigning Pasha attempted to pull it down and failed. But what could not be done by the arms of Jussuf Caramalli, *was done by the jealousy of Commodore Rodgers and the hot haste of Tobias Lear.*
>
> Lear was Consul General of the United States at Algiers, and had been commissioned to negotiate peace with Tripoli, when, in the opinion of the commander of the American fleet, the time for making peace arrived. Barron felt sure the time had come, *and he was right. But neither he nor Commodore Rodgers nor Lear was man enough to use it.* The flag of the United States was flying over Derne, the second city in importance in the regency. Tripoli was threatened with a bombardment, compared with which the attacks of Preble would have been mere play. The Turks were

suffering all the horrors of a long blockade. The past tyranny of Jussuf and the presence of Hamet had brought the people almost to the verge of revolt. Yet, when Lear appeared off Tripoli in the *Essex*, he accepted with eagerness a peace most shameful to the United States. *Barron had then gone home sick.* The command of the squadron had passed to *Commodore Rodgers, who, jealous of the success of Eaton, basely refused to sustain him further. Lear, thus free to negotiate,* signed a treaty which left Hamet to the vengeance of his brother, which compelled Eaton to quit Derne, which relieved the United States from the payment of tribute, but forced her to pay sixty thousand dollars for the release of Americans in the hands of the Pasha. But one more step was needed to complete this shameful deed, and that was quickly taken. The *Constellation* was sent to Derne; Hamet was privately informed of the treaty, false reports of further war were spread among the soldiers, ammunition was issued, rations were given out, and in the dead of night, Eaton, Hamet, the Greeks, and the Americans were hurried on board the *Constellation*. But the treachery was discovered, and as the last boat-load pushed off for the frigate, the people and the soldiers crowded the camp, the battery, and the shore, filling the air with lamentations, and loading the Americans with curses only too well deserved.—McMaster's *History of the People of the United States*, Vol. III, pp. 207-208.

The orders issued to Commodore Barron by the Secretary of the Navy relative to Eaton have already been shown, as well as the instructions at the same time received by Barron, with regard to Tobias Lear. These last named instructions may here be repeated and were as follows:

Col. Tobias Lear, our Consul General at Algiers, is invested by the President with full power and authority to negotiate a treaty of peace with the Pasha of Tripoli, and also to adjust such terms of conciliation as may be found necessary with any of the other Barbary powers. He is, therefore, to be conveyed by you to any of these regencies, as he may request of you, and you will cordially co-operate with him in all such measures as may be deemed best calculated to effectuate a termination of the war with Tripoli, and to ensure a continuance of the friendship and respect of the other Barbary powers.—Secretary of the Navy to Commodore Barron, June 6, 1804. *State Papers*, Vol. V, p. 164.

On the same date, in a letter to Tobias Lear, the Secretary of State had said:

Commodore Barron has orders to provide a suitable time for your joining him, in order to the negotiating a peace with Tripoli. This, we hope may now be effected under the operations and auspices of the force in the hands of that officer, without any price or pecuniary compensation whatever. . . . . For the ransom of the prisoners, if a ransom be unavoidable, you may stipulate a sum not exceeding five hundred dollars for each prisoner, including officers, but deducting from the number in the hands of the Pasha, those promised to Captain Dale to be released, in return for the

release of some of the Pasha's subjects who had been captured by him, and also as many as may be considered an equivalent for the captures of Captain Preble. . . . . Of the co-operation of the elder brother of the Pasha of Tripoli, we are still willing to avail ourselves, if the Commodore should judge that it may be useful, and to engage which, as well as to render it more effectual, he has discretionary authority to grant him pecuniary or other subsidies *not exceeding twenty thousand dollars;* but the less reliance is placed upon his aid, as the force under the orders of the Commodore is deemed sufficient for any exercise of coercion which the obstinacy of the Pasha may demand. *The power of negotiation is confided to you in the first instance,* but in case of accident it is to devolve on the acting commodore of the squadron.—*State Papers,* Vol. V, p. 433.

There were three hundred and seven American prisoners held in captivity by the Pasha of Tripoli. These consisted of Captain William Bainbridge, his officers and crew of the frigate *Philadelphia,* which vessel in October, 1803, had run upon the rocks on the coast of Tripoli and had been captured with all on board. In the treatment of prisoners, the well known practice of all of the Barbary states, was to enslave them, put them at hard labor and treat them with the extreme of barbarity. These facts greatly increased the difficulties and responsibilities of those charged with the duty of treating with the Pasha.—*Goldsborough's Naval Chronicle,* pp. 250-261.

On May 18, 1805, Commodore Barron at Malta, wrote Consul General Lear as follows:

The recent despatches from Mr. Eaton have been communicated to you. From their tenor, and the knowledge I have within a short time obtained of certain features in the character of Sidi Hamet Pasha, I must candidly own that I have no longer the same expectations which I once entertained of the success of the co-operation with him. His want of energy and military talents, his total deprivation of means and resources, the great expense already incurred, and the large sum which would be required, according to Mr. Eaton's statement, for pursuing the object, a sum far exceeding both the resources placed at my disposal, and the powers vested in me by my instructions, *compel me to relinquish the plan.* Indeed, on mature reflection, I am of opinion, that if the ex-Pasha, having received this impulse from our strength, and being put into possession of Derne, the province where his interest is supposed to be the strongest, has not in himself sufficient energy, address, and courage, and cannot command sufficient means to move on with firm steps towards the usurper's residence, whilst we second his operations by sea, *he must be considered no longer a fit subject for our support or co-operation.* I am preparing to send provisions to the coast for the subsistence of the crews of the *Argus* brig and *Nautilus* schooner, which remain there at Mr. Eaton's request, and by the sloop *Hornet* which conveys them, I shall send such instructions to that gentle-

man, and the officers with him, as further reflection, and the nature of your determination, on this letter, may dictate. (See letter Barron to Eaton, May 19, 1805 ante, and to Hull, same date.)—*State Papers*, Vol. V, p. 186.

Barron, however, in this letter expressed the belief that the reigning Pasha had been greatly impressed by the co-operation with Hamet and the capture of Derne, and offered his opinion that the time was favorable for opening negotiations for peace. Continuing he said:

Strongly persuaded that your conclusions on these points have anticipated my own, I am induced to state to you my earnest wish that you may deem it expedient to meet the overture lately made, through the Spanish Consul, by his excellency (the Pasha of Tripoli), so far as to found on it the commencement of a negotiation.

Referring to Bainbridge and the other prisoners, he said:

I must contend that the liberty and perhaps the lives of so many valuable and estimable Americans ought not to be sacrificed to points of honor, taken in the abstract.

And continuing he added:

Should the event justify my hopes and expectations of your coincidence with me on this interesting subject, and you determine on going to Tripoli, Captain Barron, commanding the *Essex* frigate, who is under sailing orders for the blockade, will be instructed to wait your arrangements and convey you thither.—*State Papers*, Vol. V, p. 188.

Replying to the above, Lear on May 19, 1805, at Malta, wrote:

I have maturely considered the several points mentioned in your letter, relative to a negotiation with the Pasha of Tripoli; and upon a view of my instructions from the government of the United States on the subject, I conceive it my duty to endeavor to open and bring to a happy issue a negotiation for peace, consistent with the tenor of these instructions, whenever the commander of our naval force, in this sea, shall judge that the occasion is proper and favorable; as it is presumed that the Pasha will be impressed by the aspect or operations of that force, and as this is, in your opinion, a proper occasion, I shall hold myself in readiness to proceed in a few days on that business, with Captain Barron in the United States frigate *Essex*, which you are so good as to say will wait my arrangements. I presume, as Captain Rodgers, who is your second in command, and who will, of course, take the command of the squadron, if your health, as you apprehend, should compel you to relinquish it, is now off Tripoli, and may be possessed of some information relative to our affairs with that regency, which has not reached you, that he will be fully advised of the motives which have induced this measure and instructed to give it all the facility which his judgment may suggest.—*State Papers*, Vol. V, p. 189.

And continuing in the same letter, Lear said:

. . . . I am of the opinion that as he (the Pasha of Tripoli) has dis-

covered a disposition to open a negotiation, we should embrace it, to see if such terms can be made as are admissible on our part, and to release our unfortunate countrymen out of his power, whose fate ought not to depend on the small punctilios.

But Lear, in this letter, dissented from Barron's opinion as to the favorable effect of the co-operation with Hamet.

On May 22 Commodore Barron wrote Lear, saying:

I have now to acquaint you, that for the reasons mentioned in my communication of the 18th, which every day's experience fatally strengthens, I have conceived it a duty owing to our country, as well as an act of justice to the squadron, to relinquish a station, which the langour of sickness, and consequent mental, as well as bodily inactivity, prevent me from filling any longer with approbation to myself, or with advantage to the service. I have accordingly written by the *Essex* to Captain John Rodgers, the officer next in seniority (now off Tripoli in the *Constitution*), officially resigning to him the command of the naval forces of the United States in this sea; and I have at the same time expressed my ardent desire *that he should give every facility to the important measure which has been agreed upon, and support the negotiation with all his zeal and activity.* I beg leave to mention that the *Essex* is completely ready for sea. Captain Rodgers has now been fifty days on the station, and I feel the importance of his being made acquainted with my determination without delay.—*State Papers*, Vol. V. p. 415.

On the same day (May 22) Commodore Barron wrote Captain Rodgers, saying:

Captain James Barron, commanding the *Essex*, has received orders to proceed off Tripoli, for the purpose of conveying the consul general, *who will communicate to you his intentions, which will be further explained by the accompanying copies of my late correspondence with him.*

After stating that the condition of his health made it necessary for him to relinquish the command of the squadron, Barron further said, in the same letter:

. . . . accordingly I do hereby resign the command of the naval forces of the United States in these seas, and by this letter communicate my resignation officially to you, on whom the command devolves by the law of seniority, *reserving to myself, however, the right of resuming it in case the war should be protracted beyond my hopes and expectations, and my health fully restored.* I have only to add on this point, that the pain inseparable from this act of duty, is greatly alleviated by two reflections: first, that in having you, sir, as my senior captain, I am enabled to resign my station to an officer who already in a high degree, enjoys the confidence of our government; and secondly, *that previous to my resignation, the consul general has expressed his coincidence with the opinion which I officially communicated to him, respecting the propriety and policy of meeting the recent overtures of the Pacha of Tripoli, so far as to open a negotiation,*

for which I am persuaded that the present moment is favorable, and of the success of which I entertain sanguine expectations, conducted as they will be, by a gentleman of such ability, experience, and moderation, as Colonel Lear, with the ready assistance and co-operation which I doubt not he will find in your activity and zeal. . . . .

I beg leave to refer you to Captain Barron for full particulars of occurrences since your departure, and for the present distribution of the squadron, and I beg leave also to assure you that my anticipation of the success of Col. Lear's visit to Tripoli, will not diminish in the smallest degree the preparations for offensive measures, and that, as far as my strength will permit, I shall proceed with every necessary arrangement *till we meet.* —*State Papers,* Vol. V, pp. 416 and 418.

It is significant of the conditions under which Rodgers received the command, that Barron, in transferring it to him, qualified that act by expressly reserving the right to resume the command and evidently had no intention of immediately leaving the station; and, although McMaster states that "Barron had then gone home sick," the fact is that Barron did not go home until July 13, when he sailed from Malta in the *President*—more than a month after the termination of the war.—See *Our Navy and The Barbary Corsairs,* by G. W. Allen, Boston, 1905, p. 270.

On June 2 Eaton, writing to Commodore Barron from Derne (prior to hearing of his relinquishment of the command), said:

Last evening I had the honor to receive your letter of the 19th ultimo, by which I learn that the reigning Pasha of Tripoli has lately made overtures of peace, which the consul general, Colonel Lear, has determined to meet, viewing the present moment propitious to such a step. In consequence of which it seems *contemplated that we should withdraw ourselves from this coast.*—*State Papers,* Vol. V, p. 419.

This letter had been begun on May 29 and was continued until June 11, when it was closed and addressed to Commodore Barron as Commander-in-Chief. Barron, it is to be remembered, was at Malta. Rodgers was at Tripoli, about six hundred miles from Derne.

On May 26 Consul General Lear arrived before Tripoli on board the *Essex* and by the same ship Captain Rodgers received Commodore Barron's letter of May 22, turning over to him the command of the squadron. On the same day Lear opened communication with the Pasha of Tripoli through the Spanish Consul at that place.—Lear to Secretary of State, *State Papers,* Vol. V, p. 443.

On May 29, in a letter to Commodore Barron, acknowledging

the receipt of his letter resigning the command, Commodore Rodgers wrote:

From the relation by Captain Barron and Colonel Lear of your last instructions to Mr. Eaton, I conceive it unnecessary for me to say anything further on that subject, *as he has, no doubt, evacuated Derne and (is) now on his return in the Argus to Syracuse or Malta.*—*State Papers,* Vol. V, p. 430.

On the same day (May 29) Lear submitted his ultimatum to the Pasha.—Lear to Secretary of State, *State Papers,* Vol. V, pp. 443-444.

On the same day (May 29) Eaton at Derne, had begun the letter to Barron at Malta, already alluded to, which he closed on June 11.—*State Papers,* Vol. V, p. 418.

On June 3 Lear concluded the treaty and the preliminary articles were signed.—*State Papers,* Vol. V, p. 446 (Lear to Secretary of State).

Not until after the treaty had been concluded did Rodgers, off Tripoli, on June 5 write Eaton as follows:

Although I do not expect this will find you at Derne, conceiving you have evacuated that place agreeable to Commodore Barron's last advices to you by the United States sloop Hornet, yet as it is not impossible some unforseen circumstance may have delayed your compliance with his advices, I have thought it advisable to send the *Constellation,* Capt. H. G. Campbell, to apprize you of peace having been concluded between the United States and the Joseph Pasha of Tripoli on the 3d inst. and have to desire that no further hostilities by the forces of the United States be committed against the said Joseph Pasha, his subjects, or dominions, and that you evacuate and withdraw our forces from Derne, or whatever part of his territory this may find you, agreeable to the enclosed articles of stipulation between Tobias Lear, Esq., Consul General for Algiers, and Commissioner of Peace on the part of the United States and the said Joseph Pasha of Tripoli.—*Life of Eaton,* pp. 375-376.

The *Constellation* arrived at Derne at 6 p. m. on June 11—Eaton to Rodgers, *State Papers,* Vol. V, p. 437.

The foregoing facts, appearing plainly upon the face of the records, one would suppose could not escape the attention of the careful historian. They clearly show that the events happening prior to the time when Rodgers received command of the squadron, were ones over which he had no control and that, in the course of those events, the support of the squadron had been withdrawn from Hamet at Derne, rendering Eaton's evacuation of that place inevitable and, so far as Rodgers, at Tripoli, could then know from

information at hand, an accomplished fact. They further show that the same events had, before Rodgers received the command, placed Tobias Lear in a position to open the negotiations for a treaty, which Lear, alone, was authorized by the government to begin (at the suggestion of Barron), conduct and conclude; and which he did, in fact conclude, eight days after his arrival before Tripoli in the *Essex*.

On June 4 (one day after the signing of the preliminary articles of the treaty at Tripoli) Hull, commanding the ships at Derne, and still acting under orders previously given him by Barron, had notified Eaton of Barron's order for the withdrawal of these ships from the coast, at the same time informing Eaton that the ships were ready for sea and in readiness to receive him and his command on board. His letter to Eaton was as follows:

Sir: I have the honor to inclose you a copy of my orders by the *Hornet*, Lieutenant Evans, from Samuel Barron, Esq., Commander-in-Chief of the United States Squadron in the Mediterranean, by which you will be informed that the United States vessels under my command are to leave this coast for Syracuse as soon as the necessary arrangements can be made for that purpose.

I have therefore to inform you that the *Argus* and *Hornet* are ready for sea and in readiness to receive you and the men under your command on board at any moment that you inform me of your intentions to abandon your post, and a favorable opportunity offers to take you off.—*Life of Eaton*, pp. 374-375.

Eaton's reply to Hull on June 5, was as follows:

Sir: I think the tenure of this post so important to the issue of the negotiation now pending between the United States and the reigning Pasha of Tripoli, that I cannot reconcile it to a sense of duty to evacuate it, except compelled by imperious circumstances, until the result of that negotiation be known, or further advices received from the Commander-in-Chief of the United States squadron in the Mediterranean. I shall therefore wait a reasonable time for the return of the *Nautilus*, which is daily expected from headquarters.—*Life of Eaton*, p. 375.

Consequently when the *Constellation* arrived at Derne on June 11, with news of the treaty and the despatch from Rodgers to Eaton of June 5, she found Eaton still there.

The next night the *Constellation* received on board Hamet, with his suite, Eaton and the Christians under his command.—*State Papers*, Vol. V, p. 438 (Eaton to Rodgers).

The "false reports of further war were spread among the soldiers" by devices adopted by Eaton himself for that purpose, as

appears from his own statements. This is a fact which McMaster fails to state and he is apparently willing to leave the impression on the mind of his reader that these false reports were spread in some way under orders of Commodore Rodgers. As has been shown, the order of Rodgers to Eaton was simply to withdraw the American forces from Derne in case he had not already done so. This order was rendered necessary by the conclusion of a treaty.

Here is what Eaton, himself, says of the "false reports" designed to cover his withdrawal from Derne on the night after the arrival of the *Constellation:*

I now communicated to the Pasha the news of peace on our part with his brother, and the convention that his family should be restored to him on condition of his quietly withdrawing from the kingdom. He said he had no safety, but in leaving the country with us; and even this would be impossible with him, and hazardous to us, if the project should transpire before carried into effect; despair would drive his adherents to revenge, and we must fall victims to it. *I consequently kept up the idea of an attack on the enemy, an idea which had been excited from a report that reinforcements had come out in the frigate for this purpose, and accordingly sent ammunition and extra rations to be distributed among our Moorish and Arab troops, and despatched spies to ascertain the enemy's position. With the same apparent view, I inspected the garrison; ordered them to be divested of all heavy baggage, and to be held at their posts in readiness to advance at the word.*—Eaton to Rodgers, June 13, 1805; *State Papers,* Vol. V, p. 438.

Hamet and his suite were landed at Syracuse.

On June 30 Eaton, at Syracuse, wrote Commodore Rodgers at the same place, as follows:

Enclosed is a copy, by translation of a letter Hamet Pasha has written me, date 29th. This, I think, is enough to do away with any insinuations concerning our intercourse with this prince, injurious to the honor of the United States. He tells me that he shall write to the same effect to the President.

In the letter to which Eaton refers, Hamet said:

Had it been ordained that measures might have been carried forward to the attainment of my wishes, the restoration of my dominions to me, it would certainly have been cause of eternal gratitude. But it is true my own means were small. I know, indeed, they did not answer your reasonable expectations. And this, I am ready to admit, is a good reason why you should not choose to persevere in an enterprise hazardous in itself, and perhaps doubtful in its issue. I ought, therefore, to say that I am satisfied with all your nation has done concerning me. I submit to the will of God and thank the King of America, and all his servants, for their kind dispositions toward me.—*State Papers,* Vol. V, pp. 196-197.

By order of Commodore Rodgers an allowance of two hundred dollars per month was made for Hamet (*Goldsborough's Naval Chronicle*, p. 277) who, in August, 1805, applied to the President for further relief. On January 13, 1806, President Jefferson laid this application before Congress, and his message of that date, reviewing the events connected with Eaton's expedition, is here given in full, as follows:

I lay before Congress the application of Hamet Caramalli, elder brother of the reigning Pasha of Tripoli, soliciting from the United States attention to his services and sufferings in the late war against that state: and in order to possess them of the ground on which that application stands, the facts shall be stated according to the views and information of the executive.

During the war with Tripoli, it was suggested that Hamet Caramalli, elder brother of the reigning Pasha, and driven by him from his throne, meditated the recovery of his inheritance, and that a concert in action with us was desirable to him. We considered that concerted operations by those who have a common enemy were entirely justifiable, and might produce effects favourable to both, without binding either to guaranty the objects of the other. But the distance of the scene, the difficulties of communication, and the uncertainty of our information, inducing the less confidence in the measure, it was committed to our agents, as one which might be resorted to, if it promised to promote our success.

Mr. Eaton, however, our late consul, on his return from the Mediterranean, possessing personal knowledge of the scene, and having confidence in the effect of a joint operation, we authorized Commodore Barron, then proceeding with his squadron, to enter into an understanding with Hamet, if he should deem it useful: and as it was represented that he would need some aids of arms and ammunition, and even of money, he was authorized to furnish them to a moderate extent, according to the prospect of utility to be expected from it. In order to avail him of the advantages of Mr. Eaton's knowledge of circumstances, an occasional employment was provided for the latter as an agent for the navy in that sea. Our expectation was, that an intercourse should be kept up between the ex-Pasha and the commodore; that while the former moved on by land, our squadron should proceed with equal pace, so as to arrive at their destination together, and to attack the common enemy by land and sea at the same time. *The instructions of June 6 to Commodore Barron, show that a co-operation only was intended, and by no means a union of our object with the fortune of the ex-Pasha; and the Commodore's letters of March 22, and May 19, prove that he had the most correct idea of our intentions.* His verbal instructions, indeed, to Mr. Eaton and Captain Hull, if the expressions are accurately committed to writing by those gentlemen, do not limit the extent of his co-operation as rigorously as he probably intended; but it is certain from the ex-Pasha's letter of January 3, written when he was proceeding to join Mr. Eaton, and in which he says, "your operations should be carried on by sea, mine by land," that he left the position in

which he was, with a proper idea of the nature of the co-operation. If Mr. Eaton's subsequent convention should appear to bring forward other objects, his letter of April 29, and May 1, views this convention but as provisional, the 2d article, as he expressly states, guarding it against any ill effect, and his letter of June 30 confirms this construction. *In the event it was found, that, after placing the ex-Pasha in possession of Derne, one of the most important cities and provinces of the country, where he had resided as governour, he was totally unable to command any resources, or to bear any part in co-operation with us. This hope was then at an end; and we certainly had never contemplated, nor were we prepared to land an army of our own, or to raise, pay or subsist an army of Arabs, to march from Derne to Tripoli, and to carry on a land war, at such a distance from our resources.* Our means and our authority were merely naval; and that such were the expectations of Hamet, his letter of June 29, is an unequivocal acknowledgment. While, therefore, an impression from the capture of Derne might still operate at Tripoli, and an attack on that place from our squadron was daily expected, Colonel Lear thought it the best moment to listen to overtures of peace then made by the Pasha. He did so, and while urging provisions for the United States, he paid attention also to the interests of Hamet; but was able to effect nothing more than to engage the restitution of his family, and even the persevering in this demand suspended for some time the conclusion of the treaty.

In operations at such a distance it becomes necessary to leave much to the discretion of the agents employed: but events may still turn up beyond the limits of that discretion. Unable in such a case to consult his government, a zealous citizen will act as he believes that would direct him, were it apprized of the circumstances, and will take on himself the responsibility. In all these cases, the purity and patriotism of the motives should shield the agent from blame; and even secure a sanction where the error is not too injurious. *Should it be thought by any that the verbal instructions, said to have been given by Commodore Barron to Mr. Eaton, amount to a stipulation that the United States should place Hamet Caramalli on the throne of Tripoli, a stipulation so entirely unauthorized, so far beyond our views, and so erroneous, could not be sanctioned by our government;* or should Hamet Caramalli, contrary to the evidence of his letters of January 3, and June 29, be thought to have left the position which he now seems to regret, under a mistaken expectation that we were at all events to place him on his throne, on an appeal to the liberality of the nation, something equivalent to the replacing him in his former situation might be worthy its consideration.

A nation, by establishing a character of liberality and magnanimity, gains in the friendship and in respect of others more than the worth of mere money. This appeal is now made by Hamet Caramalli to the United States. The ground he has taken, being different not only from our views but from those expressed by himself, on former occasions, Mr. Eaton was desired to state whether any verbal communications passed from him to Hamet which had varied what we saw in writing. His answer of December 5 is herewith transmitted, and has rendered it still more necessary,

that, in presenting to the legislature the application of Hamet, I should present them at the same time an exact statement of the views and proceedings of the executive, through this whole business, that they may clearly understand the ground on which we are placed. It is accompanied by all the papers which bear any relation to the principles of the co-operation, and which can inform their judgment in deciding on the application of Hamet Caramalli.—*State Papers*, Vol. V, pp. 159-162.

In the letter from Eaton to the Secretary of the Navy of December 5, 1805, alluded to in the President's message, Eaton said:

Commodore Barron's instructions to Captain Hull, of September 15, 1804, and my convention with Hamet Pasha of February 23, 1805, comprise all the obligations entered into with Hamet.—*State Papers*, Vol. V, p. 199.

The mere presentation of these records, disclosing as they do, the final transactions of the Tripolitan war in their true relation to the men chiefly concerned in them, renders unnecessary any extended comment upon the account given by McMaster, in which certain well authenticated facts have been treated with surprising inattention. Whatever may be thought of Eaton's expedition, or its purposes and results, the assertion that its withdrawal from Derne was brought about by causes in any manner attributable to Commodore Rodgers, is too manifestly without foundation to call for discussion; and of McMaster's remarks with reference to that officer, it is enough to say that, being shown to be unwarranted, they are singularly heedless and unjust, and have no proper place in any chronicle of the Tripolitan war.

Italics used in quoting in this paper are mine.—R. S. R.

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DECATUR AND COLERIDGE.

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The conjunction of these names cannot be regarded as a natural introduction to an essay in naval biography or naval tactics. It may seem, indeed, that the attempt to associate two men whose pursuits and characteristics were so radically distinct must involve too much of artifice to be interesting. Decatur was the typical man of action of the eager dawn of the fighting period of the American navy, while Coleridge was a dreamy poet and desultory philosopher, most of whose long and unhappy life was spent in rustic or suburban retirement in England. The fact remains, however, that fate brought these aliens into contact under conditions which led to a friendship expressed in an interchange of letters and in the reminiscences made public by the survivor long after the untimely death of the younger and more fortunate of the pair. Given the fact that both were men of historical significance, the incidents and sequels of their acquaintance cannot be altogether destitute of literary and human interest.

While it seems impracticable to present any inedited material in this paper, it is only fair to assume that the printed sources of information are rarely accessible to those who follow the sea. Though Coleridge's *Friend* is accounted as something of a classic it is not likely to be included in ships' libraries—or to be read with avidity by the average man who follows Decatur's profession. The essays which profess to reveal "the systematic discipline of mind requisite for a true understanding" of the principles of politics and religion and the "landing-places, interposed for amusement, retrospect, and preparation," are apt to tire the modern reader—even though he has not ruined his mental diges-

tion by an exclusive diet of journalistic fiction. Even the *Life of Decatur*, by Alexander Slidell Mackenzie, may pass for an out-of-the-way book, and the writer is, perhaps, better remembered in connection with the misfortunes of his naval career than for works which were once associated with political, as well as with personal and professional, controversies. These relate rather to his account of Perry than to the narrative now in question, and this study need revive no embers of partisan strife.

Yet it remains impossible to account for Decatur or any naval commander of his epoch without constant reference to his social and political environment. Even the maxim, "Our country right or wrong," which seems to sum up the character of our hero, was uttered rather as a warning to certain factious politicians than as a principle obvious to all men. In citing the utterances of Decatur and his comrades the selection will be made for illustration and not for argument, since this paper has no didactic purpose whatever.

Before relating the circumstances which brought Decatur and Coleridge together at Malta in 1804, it may be well to present a brief outline of their careers previous to that meeting. Though Decatur was the younger man by seven years, he had more adventures—if not more achievements—to his credit at twenty-five than were ever to fall to the lot of the man of torpid contemplation. As the name indicates, he was of French descent, his grandfather having quitted the French navy to marry an American and settle at Newport. There the elder Stephen Decatur was born in 1751, and thence he sailed as a merchant seaman before the Revolution. The war made him a privateer, and his inherited capacity and zeal made him successful in that hazardous pursuit. His family had been established in Philadelphia, but the occupation of that city by the British caused a migration which made Maryland the native state of the second Stephen Decatur, born in 1779. He crossed the ocean with his father at the age of eight, acquired a fair education, active habits, and a stock of anti-Jacobin—or Federalist—prejudices before his boyhood was outgrown. He also tried to enter mercantile life at the age of seventeen, but it was found that he was better fitted for outdoor employment than for the duty of a clerk, and he had to superintend the preparation of the timbers of a frigate which the nation had at last found indispensable. That frigate was the *United States*, and Decatur was destined to be her

most notable commander. He sailed in her as a midshipman in July, 1798, and his father was commissioned as a captain at the same time. The fleet in which they served was fitted out for reprisal against the French corsairs and frigates which had begun to harass American commerce in 1797.

Of the six frigates authorized by Congress in 1794, when it was decided to equip a force adequate to protect our commerce from the Algerine corsairs, only three were available four years later. There had been a proviso to save the appropriation if peace could be concluded in time, and by paying tribute to the amount of a million dollars the piratical Dey had been induced to sign a treaty. A frigate fully armed and equipped was included in the tribute paid, but it required urgent messages from President Washington to induce Congress to sanction the completion of three out of the six frigates planned. The *Constitution*, the *United States*, and the *Constellation* were the nucleus of a navy which was strengthened by the purchase of various smaller craft, by the armament of prizes, and by the gift of the frigate *Philadelphia* by citizens of the city of that name, coupled with a stipulation that she should be commanded by the elder Decatur. His son first won fame by destroying this fine vessel in the harbor of Tripoli in February, 1804.

The *personnel* of the navy was hardly in better condition than its armaments. Paul Jones was dead after his wanderings in Russia, and there was no other personality of equal fame to assume the chief command. Still there was no lack of captains trained in the merchant service and the privateers of the Revolution. Congress named six of these expert seamen as captains in 1794, but the most adventurous among them, Captain Joshua Barney, captor of the *General Monk* in 1782, who would not admit the seniority of an officer whom he described as a lieutenant-colonel, declined the appointment and transferred his valuable services to the French Republic. He continued to cruise under the French flag during the years of maritime depredation which led to reprisal in 1798. Though he had command of the French West India squadron and had sundry privateers at sea, cruising under French letters of marque, he appears to have done his best to divert predatory activity from the trade of the United States. Nevertheless, he found the history of his French connection embarrassing whenever he sought to represent Baltimore in Congress in later years.

Decatur's first captain was Commodore John Barry, the senior officer of the navy. He too had made smart captures during the Revolution, and he was never tempted to quit the service of the country of his adoption. Among the junior officers Decatur found two youths who had been his schoolmates in Philadelphia. Midshipman Richard Somers attained a place in history—or in patriotic mythology—more than a century ago, while his senior, Lieutenant Charles Stewart, lived so long that many officers still living—some of them on the active list—can recall a glow of pride due to the conjunction of their names in the Navy Register with that of an officer who entered the service in 1798 and earned for the *Constitution* the title of *"Old Ironsides"* in 1814. Since the death of the old Commodore in 1869 his grandson, Charles Stewart Parnell, has had time to run a fiery course as a political leader in Ireland and to die in comparative obscurity.

The first November gale encountered by the *United States* in the Gulf Stream developed certain defects in her equipment, and gave one of her officers an opportunity to show himself a seaman. When the slackening of the lower rigging threatened the loss of the masts Lieutenant James Barron, who was only the third officer of that rank on board, volunteered to set up the shrouds in a seaway. Commodore Barry accepted the bold offer, and the ticklish job was done under Barron's supervision. He was then accounted one of the ablest practical seamen in the service, and he was soon advanced to an independent command. But he spent the latter half of his long life under a cloud, and Decatur fell a sacrifice to his desire to redeem his reputation as a naval commander, in 1820.

In the spring of 1799, less than a year after his entrance into the service, Decatur was commissioned as a lieutenant. He had not then attained the age of twenty-one, but he was destined to reach the rank of Captain only four years later. Young men had their day for once in the American Navy. Even the veterans were not old. Barry died at 58, Barney at 59; the latter having rendered gallant service in both wars against Great Britain. The interval between those contests was 37 years—the same number as that which intervened between the outbreak of our great Civil War and the brief contest with Spain. But most of the captains who served after 1804 were men who joined the navy in 1798—a date no less memorable in the annals of promotion than that of 1841, when the removal of the Navy Commissioners permitted the advent of a host of midshipmen.

Most of the young captains of 1812 were trained in the merchant service. Bainbridge and Stewart, like Barney, had the command of merchantmen before they were twenty, thus acquiring confidence as well as experience. Decatur lacked the latter advantage, but he never showed any lack of confidence. With a better education than most of his comrades—he had even studied navigation with a former officer of the British Navy—and with some advantage from the position and wealth of his father, he had influence and popularity in his favor from the first. He was, no doubt, an active and diligent officer; he showed gallantry on such occasions as his first cruise afforded; and he manifested spirit by fighting a duel with the mate of a merchantman who felt aggrieved by the summary removal of members of his crew for service in the navy. The young duellist said that he would not kill his man, but bring him down by a ball in the hip. His aim was good, and it is supposed that he purposely made the same shot when confronted with Commodore Barron twenty years later.

The close of the futile strife with France in 1801 coincided with the beginning of President Jefferson's administration. Congress lost no time in reducing the navy; the President was directed to sell all the ships except a baker's dozen, to lay up in ordinary all but six of these, retaining all armaments for contingencies. As far as material went, the last provision was the most odious to the progressive element in the navy, as it prevented the introduction of carronades—then preferred to long guns for the armament of sloops and frigates. But the reduction of the personnel involved much heart-burning. Only nine captains out of 28 and 36 lieutenants out of 110 were to be retained, and the intermediate grade of master-commandant was to be abolished. Decatur's father left the service at this time, whether as a matter of choice or compulsion does not appear, but the son was continued in his rank as a lieutenant. Cooper points out that along with some meritorious persons, many unfit were mustered out, and concludes that "the navy was greatly benefited by the reduction," adding that the President discharged his delegated duties in perfect good faith, that is, without regard to party considerations. It may be worth while to note that Cooper belonged to Jefferson's party, though this does not justify the disregard of his credible testimony. We are, or ought to be, far from the period when his works were weeded out of public libraries on account of partisan feeling.

The war with Tripoli soon compelled the revival of the navy. Jefferson's dream of laying up half the ships in the Eastern Branch of the Potomac, where they " would require but one set of plunderers to take care of them," became impracticable, and the Secretary of the Treasury had to divert a fourth or more of the national revenue to the support of naval armaments.

Of the war with Tripoli not much need be said. No epoch in the world's history has been more deeply impressed upon the imagination of American youth, and Decatur's part in the epic was perhaps the foremost of all. He was the first—and it may be, the last—to win command rank by personal prowess, and his gallant deeds were acclaimed by the navy as well as by the voice of public notoriety. He began his cruise in the Mediterranean in 1801 as first lieutenant of the *Essex*, under Captain Bainbridge, who was five years his senior in age and had passed nearly half of his 28 years at sea. Bainbridge had already acquired a belligerent temper and a stock of grievances before he fell into the hands of the Bashaw of Tripoli in consequence of the grounding of the *Philadelphia* in October, 1803. In 1796 he had lost a member of the crew of the merchantman he commanded by forcible impressment in a British cruiser—an act which he promptly avenged by taking an English sailor out of the first British vessel he met at sea. Such an act of piracy—for technically it was nothing less—would hardly have been condemned by any jury of seamen, even in a British port. Barney had been cleared on a charge of piracy in Jamaica in 1794, though his offense, the rescue of a prize from her captors, was apt to be more harshly viewed in a privateering community than a simple act of violence by way of reprisal. Then in 1798 the first naval vessel Bainbridge commanded, the schooner *Retaliation*, was captured by a French squadron, and the threats and indignities of the officials at Guadeloupe were such that Congress passed an act of retaliation as soon as his indignant report was presented. Two years later Bainbridge visited Algiers as a bearer of tribute in the frigate *George Washington*. The Dey ordered him to Constantinople to carry an embassy and treasure to the Sublime Porte, arguing that the payment of tribute made the Americans his slaves. The anchorage was commanded by his batteries, and though Bainbridge stormed, of course, he made the voyage under what he regarded as compulsion—though it would seem that a seaman who could dash through the Dardanelles in

despite of the Turkish batteries might have outwitted the gunners at Algiers. But Bainbridge rather seems to have enjoyed the experience. He took pains, however, to anchor out of range of the Dey's cannon and to evade compliance with his further orders upon his return from the Levant.

The cruise of the *Essex* was by no means free from complications. She belonged to Commodore Dale's squadron, sent to the Mediterranean to guard against Tripolitan acts of war. At Barcelona her boats were annoyed by the harbor police, who acted, so Bainbridge informed the Captain-General, "merely out of wantonness and with a pointed intention to insult." Decatur found a shorter way to adjust official relations, but he was restrained from fighting the Spanish officers and from offering them violence ashore, and a suitable apology was obtained by diplomatic dealing with the Prince of Peace (Godoy), then a power at Court. Bainbridge had already encountered the official methods of the Spaniards at Havana in 1800. He then informed the Governor-General that he meant to pursue French privateers fitted out in Spanish without regard to territorial limits: "nothing shall protect them from capture but the guns of the fortresses which defend the harbor in which they are anchored."

Moorish pirates were not apt to receive greater consideration from such a commander than the agents of more civilized powers, and Bainbridge had no hesitation in threatening to hang the master of the *Meshboha* unless he could produce some sort of a commission to justify the seizure of an American brig found in his custody. The document thus extracted enabled Commodore Preble to make a demonstration at Tangier and thus to put Morocco out of the game before attacking Tripoli.

Decatur went home in the *Essex* in June, 1802, and returned to the Mediterranean as first lieutenant of the *New York* in September of that year. The frigate was commanded by Captain James Barron. The relations between these two officers did not last many months, as the commodore felt compelled to send Decatur home as a passenger in the *Chesapeake*, which Barron brought to Norfolk early in 1803. The circumstances which led to this transfer throw some light on the young champion's views regarding the point of honor and the custom of the age.

Certain junior officers of the *New York* were more or less rudely treated by a group of British officers, and one of them,

Midshipman Joseph Bainbridge, convinced that there was a fixed purpose to insult him, gave the chief offender a blow. A challenge was sent on board the next morning, and it appeared that the insulter was the acting secretary to the governor of Malta, Sir Alexander Ball, R. N., and a notorious expert in duelling. The midshipman was ignorant of that deadly art, but he lost no time in accepting the challenge, proposing to fight with the support of a second as inexperienced as himself. Decatur intervened, and the arrangements he made were calculated to deprive the expert of his advantage. He named the pistol as the weapon, and insisted that the range should be four paces only. The English second protested that the terms proposed looked like murder. Decatur persisted, offering to fight himself at ten paces, but refusing to leave the advantage against his principal. The men were placed accordingly only four yards apart. The admiring biographer, who wrote while the code was still dominant, relates that Decatur in giving the word, "kept their pistols extended until he observed the hand of the Englishman to become unsteady. He then gave the word, 'Fire.'" These tactics became effective on the second round, and the challenger received a mortal wound. A demand was made for the surrender of Bainbridge and his second to be tried by the civil courts. The American squadron withdrew from Malta, and the officers for whom the demand had been presented were sent to the United States.

Decatur was back in the Mediterranean in November, 1803, with an appointment to command the schooner *Enterprise*. By this time war with Tripoli had been declared by Congress, and the *Philadelphia* was a Tripolitan prize.

Decatur had lost no time in offering to undertake the rescue or destruction of the frigate, and when Stewart made a similar proposal the commodore could only offer him a chance to co-operate—a chance which the eagerness of Decatur was to render impracticable. The crew of the *Intrepid*, all told, amounted to 74 men, including the three lieutenants of the *Enterprise*, James Lawrence, Joseph Bainbridge, and Jonathan Thorn; half a dozen midshipmen, and a Sicilian pilot, Salvadore Catalano, who was the senior master of the navy when he died in 1846. With these men the decks were cleared and the ship set on fire in the briskest fashion on the night of February 16, 1804.

Decatur was henceforth a hero, a part which he played gal-

lantly to the end of his days, doubtless with some traces of the dramatic instinct inherited from his French ancestors, but with a sincere notion of responsibility toward the service and the nation. When he sailed in command of a squadron to exact a treaty from the Dey of Algiers in 1815 he equipped all his captains with Turkish pistols and scimeters from the first prize taken, and his own choice weapons lay on the capstan while he walked the deck in full uniform—with such additions as gold tassels on his boots and the badge of the Cincinnati on his breast—when he hoped to engage an Algerine cruiser. The final act of his life was the sequel of an effort to exclude one whom he regards as unworthy from the honor of a command in the navy.

The summer of 1804 was spent in a campaign against Tripoli, during which Decatur bore a leading part in various actions between the flotilla which Preble had improvised in Sicilian harbors and the forts and gunboats of the defense. In the first attack Decatur had the misfortune to lose his brother, but he brought off two prizes which he had carried by boarding after sharp fighting with sword and pistol. His share in the two night attacks was no less notable, and the news of his promotion to the rank of captain upon the receipt of Preble's report of the destruction of the *Philadelphia* was welcomed by his comrades, even by those over whose head he was advanced. Among these were Stewart and Somers, the former of whom was to have his chance to earn honors and fifty odd years to wear them. The latter perished with all the gallant company of the *Intrepid* in the ineffectual attack which closed the campaign on the night of September 4. Preble told the Navy Department that with one more frigate he could have closed the war and released Bainbridge and his crew from prison. It proved that his vigorous campaign had had the due moral effect, since the truculent Bashaw lost no time in making a treaty—which he had no intention of keeping—and in giving up his prisoners for $60,000 after 19 months confinement.

Though little permanent effect had been produced upon the Barbary pirates by the blockade and battering which the weakest member of the group had endured, the campaign had in a measure inspired and consolidated the military element of the little navy. Preble could note with satisfaction, "that we have neither had a duel nor a court-martial in the squadron since we left the United States." Foreign observers were prompt in expressing admiration

for the gallantry shown in the attempt to restrict the ravages of piracy and for the statesmanship which had sanctioned such resistance. Nelson was generous in praising Decatur; Sir Alexander Ball, who had been one of Nelson's "right hands" after Aboukir and was now governor of Malta, wrote to Preble that his services had been worthy of a "great and rising nation," and that he had "done well in not purchasing a peace with money." The situation would naturally be appreciated at Malta, so long the headquarters of organized effort to keep the Barbary pirates in check. The knights had, however, been so much addicted to piracy on their own account, in the West Indies as well as the Mediterranean, besides furnishing officers to command the galleons of the Kings of Spain and the galleys of the Kings of France, that the ruin of their establishment was not generally regretted by seamen.

Piracy had thriven largely because of the tolerance shown by maritime powers, tolerance based on sordid calculations of commercial advantage with reference to the United States and "the little states of Italy," as unworthy aspirants for a share of the carrying trade. Of course when Lord Sheffield wrote in 1784 that, "We might as reasonably dread the effects of combinations among the Germans as among the American States," he assumed that the latter could not afford a navy: "It must be a long time before they can engage, or will concur in any material expense." The war with Tripoli did something to put an end to such calculations and comparisons, but the task of breaking up the practice of piracy on the Barbary coast had to be left to European powers, to the guns of Lord Exmouth which battered the town of Algiers in 1816 and the French troops who overran the country a few years later.

After Decatur had received his captain's commission he was assigned to command the *Constitution*, our finest frigate. His cruising experience at that time was less than that enjoyed previous to the Spanish war of 1898 by many officers, designated hereafter to assert the claims of "young blood," before emerging from the grade of ensign. The question whether their education was better adapted to the mechanism they will be called upon to control than Decatur's was to his carronades and clewlines, does not admit of a numerical solution.

At any rate the captain of the *Constitution* was, and deserved to

be, an honored guest at Malta in the autumn of 1804. Next to the gallant admiral who governed this new British possession, the Colonial Secretary was the highest civil official. As previously related, a former incumbent had been removed by Midshipman Bainbridge's pistol under Decatur's direction. In a year and a half he seems to have been forgotten. Both he and his successor held acting appointments, the nominal incumbents being past work or absent from the island. The secretary who received Decatur in 1804 was Samuel Taylor Coleridge, then aged 32, but already "*un jeune homme d'un beau passe.*"

His extraordinary personality and his futile adventures must now be briefly outlined. The son of a pedantic clergyman, born in 1772, was naturally destined to attend some such institution as Christ's Hospital in London; and there Charles Lamb knew Coleridge as an "inspired charity boy" up to his eighteenth year. At Cambridge he got into trouble—financial, apparently—and in 1793 he enlisted in the King's Dragoons. He proved "a totally incapable horseman," as prefigured in his assumed name of Cumberbatch, and was discharged after four months' service. Even in this unpromising environment Coleridge had made friends; his fellow dragoons liked to listen to his stories, and were not unwilling to keep the poet's horse and accoutrements in order in return for his aid in writing letters.

Coleridge then joined Southey and other imaginative youths in a project to found a communistic society to be called a "Pantisocracy" and located on the banks of the Susquehanna. The harmonious name seems to have been the chief attraction, though the intending emigrants were assured of beautiful scenery, of "security from Indians and bisons," and of relatively mild mosquitos, "no worse than English gnats," in the domain they had selected. As a preliminary to emigration Coleridge married, and the existence of a wife whose company he never learned to enjoy, and children whom he made no persistent effort to support, remained the only material results of this project.

These annals are sufficiently absurd, and they may seem to explain the ultimate failure of Coleridge's life. But after all he did write the "Ancient Mariner," which was printed in the "Lyrical Ballads" in 1796. And he had impressed his collaborator, Wordsworth—not the most impressionable of men—as the "only wonderful man I have ever known." He had also travelled in Ger-

many, preached sermons enough to be named the "rising star of Unitarianism," and made his mark as a journalist and political pamphleteer. His chief claim to remembrance rests, however, upon the poetry he had written before he sailed for Malta. Fashions change, and practical men outgrow the taste for poetry, we are told, but surely all seafarers may feel some thrill from the mystery and magic of the sea revealed by the "Ancient Mariner." Yet we must not credit Decatur with any knowledge of this wonderful poem.

Coleridge went to Malta in the spring of 1804 in feeble health, but to the Lambs and other friends his departure had the air of an evasion. Mary Lamb wrote that he would "talk and talk, and be universally admired"; she had lately mixed him a glass of punch "of most deceitful strength," which had excited him to fierce debate with Godwin and other philosophers. Opium was also a part of his regimen already, and his bondage to that drug was confirmed by his residence in Malta. As conviviality was better suited to correct his moodiness than anything tending toward dreamy solitude, it may be regretted that he did not stick to punch. Under the influence of that eighteenth century nectar he had, on one festive occasion, tossed his glass through a window pane for the sake of fresh air—an example followed by the rest of the philosophical company.

Coleridge had letters to Sir Alexander Ball, who made him colonial secretary and a guest at his table during the poet's stay in Malta. Though pleased at first to be the second man in the island and to sign with a sonorous Italian title, Coleridge found life dull in Malta. Doubtless he welcomed the advent of younger and brighter men, and he seems to have intensely admired Decatur. Men of action were new to his philosophy, and he had lost no time in making Sir Alexander Ball his hero. Perhaps he was not far wrong, though his biography of Ball is said to be largely imaginative in detail. Still he was a notable seaman of the Nelsonian brotherhood. He was a captain in 1783 at the age of 26, and when placed on half-pay for seven years found it convenient to reside in France, where he met Nelson, a still younger captain, who declined all intimacy with Ball and another officer because, he wrote, "they wear fine epaulettes, for which I think them great coxcombs." This erroneous estimate was based on the display of non-regulation splendor on social occasions, and it was dispelled

by a service acquaintance. Ball finding Nelson's flagship dismasted in the Mediterranean in 1798, towed him into port in the most gallant and skilful manner and was rewarded by the great Admiral's cordial affection to the end of his days: "a friend in need" was his early title; "a new right hand" was the honor won after the battle of the Nile.

Ball also deserves remembrance as the loyal supporter of Preble during the Tripolitan campaign, as the generous protector of the Maltese people—he even wanted to have them vote as to whether they should become citizens of the British Empire—and as the patron of the unlucky Coleridge. Doubtless he appreciated his wonderful talents, as he seems to have employed him in negotiations for the annexation of Sicily. Nelson urged similar plans for making Ball Viceroy of Sardinia. The Mediterranean was a happy hunting-ground for the territorial expansionist during the Napoleonic wars. As patron of the Knights of Jerusalem, the Czar of Russia hoped to secure Malta, which Nelson argued was really the property of the King of Naples—if England could be induced to abandon such a naval station. Ball is reported as expressing his preference for a crew of "serious Scotchmen" for a fighting man-of-war, an odd opinion by no means unworthy of consideration.

The date of the only letter which remains to prove the correspondence between Decatur and Coleridge was December 13, 1804. Decatur wrote from Grand Cairo. The letter is too long to be inserted except as an appendix, but it introduces us to a new Decatur, to a young man fond of adventure, indeed, but by no means inaccessible to humanitarian sentiment and political theory. Curiously enough it reflects an opinion which Coleridge was zealous in propagating in 1804 and long afterward, the necessity of English intervention in Egypt. The Secretary of Malta had eagerly collected reports from travellers and merchants to support this view, not that the Englishman had to "sit in the seats of the faithful" to hold India, as the classic phrase of Kinglake told a later generation, but out of sympathy for the sufferings of the Egyptians under the oppression of French and Turkish conquerors. In fact, Coleridge expressly repudiates the strategic metaphor and ventures to associate Nelson's view with his own: "It was the fashion of the day to style Egypt the key of India, and Malta the key of Egypt." Whatever might be true of Egypt, Malta in the stress

of war might be "no better than a vast almshouse of 75,000 persons, exclusively of British soldiers," all dependent upon England for provisions.

Decatur turned over the command of the *Constitution* to his senior, Commodore John Rodgers; and under the orders of that officer, he sailed in the *Congress* to make a demonstration against Tunis in the spring of 1805. Much to the disappointment of the young captain, no doubt, the Bey lost no time in promising to observe the treaty. He asked also, that his envoy might be conveyed to the United States to adjust all difficulties, and the *Congress* was detached for this special service. Arriving in Norfolk late in the year, Decatur was received with the honors due to a youthful hero, tempered, perhaps, by some curiosity in regard to the swarthy ambassador who shared his cabin. Among the curious visitors was a Miss Susan Wheeler, a young Virginian distinguished for "commanding beauty, ... superiority of intellect, ... and . . . . the lighter graces," being moreover the only child of a wealthy merchant. Decatur's fate is obvious to all whose memory covers a generation or two of the social annals of the American Navy. He accepted the command of a squadron of Mr. Jefferson's despised gunboats in the Chesapeake, and was duly married in March, 1806.

Of Decatur as a domestic character there is fortunately not much to say. We are told, indeed, that his marriage elevated his character, developed his intellect, and refined his tastes. So much could be said of most successful marriages. While Decatur selected his historical reading for himself, with a natural preference for "the more stirring portions," he followed his wife's lead in appreciating the higher poetry. Let us hope that she introduced him to the "Ancient Mariner." The annals of the Decatur family are less significant than they might be, since the gallant commodore left no children. The officers who kept the name in various volumes of the "Navy Register" were descendants of his younger brother.

It is fortunate that the service which made so brave a struggle for existence at the beginning of the last century was free from domestic scandal. Like Jane Austen's brethren and friends—who were Decatur's contemporaries, though Sir William Francis Austen lived until 1865—our naval officers were as blameless in private life as they were indispensable to the public welfare. We had

no Lady Hamiltons in 1806, and even the calculation that, "if there were more Emmas there would be more Nelsons" would have made them unwelcome. In a later generation Margaret O'Neill as the widow of Purser Timberlake drove a reputable naval officer to such desperation that he attempted a personal assault upon the fiercest warrior who has ever been President of the United States; while as Mrs. Eaton she disrupted the cabinet and disturbed the diplomatic relations of the country in 1830. It is pleasant to believe that the biographer of Decatur would not have denied to him the compliment he bestowed upon Perry, whose "deportment towards the sex was courteous, circumspect, and deferential."

Coleridge returned to England in 1805, and his subsequent career may be briefly narrated. He did not escape from the Mediterranean without adventures—or what passed for such to his disordered imagination. While residing in Rome he was warned by Jerome Bonaparte that he had better make haste to leave Italy if he had "said or written anything against my brother Napoleon." Conscious of sharply-expressed editorials and aware of the Emperor's aversion to free speech, Coleridge hurried to Leghorn. There he found no shipmaster who dared to give him a passage until his conversation had fascinated an American captain, who had the poet embarked as his steward—not without resort to the familiar device of perjury. He swore that he knew Coleridge's parents who lived "in a red-brick house, about half a mile out of New York on the road to Boston." Although Coleridge co-operated by putting on a steward's jacket and carrying a basket of vegetables, he said that he would not have consented to the captain's facile perjuries. But when England tolerated no commerce except that for which "forgeries and perjuries . . . . are . . . . the only passports," as President Madison wrote in 1812, American merchants learned to use them. In 1785 Nelson wrote that American shipmasters could "swear through a nine-inch plank"; and in securing their seamen from impressment they may have been tempted to use such geographical formulas as that which saved Coleridge. As a steward Coleridge would have been impossible: with his "habits of sedentary study and academic indolence" he was as fit to become a dragoon or a backwoodsman—as he had had dreamed of being. Moreover, he was so ill during his homeward voyage that he owed his life to the Captain's nursing.

He reached England a confirmed opium-eater—two quarts of laudanum per week was his ration for a season, though unlike DeQuincey, he did not have a decanter of that beverage served with his dinner—and even Charles Lamb had to admit that he was "an Archangel a little damaged." Friends did what they could, intermittent journalism and hieroglyphic philosophies occupied his active hours, but he could live only under watchful care and partial restraint. These were provided for him by a faithful disciple, and he outlived Decatur by fourteen years.

It is easy to point out the futility of such a life, easy to dwell on the prolixity and obscurity of his talk and writing, but it must not be forgotten that some noble minds—the late Lord Acton's, for one—found, and some still find, strength and wisdom in his works Hazlitt, indeed, called him an excellent talker, "if you let him start from no premises and come to no conclusion." Carlyle too, had "heard Coleridge talk, with eager musical energy, two stricken hours, his face radiant and moist, and communicate no meaning whatsoever to any individual of his hearers." Thus does he sum up the poet's character: "Once more the tragic story of a high endowment with an insufficient will . . . . The courage necessary for him, above all things, had been denied him."

> "All things he seemed to understand,
> Of old or new, at sea or land,
> Save his own soul which was a mist."

Coleridge claims no further place in this paper except as the exponent of views concerning America, views derived from Decatur during the Maltese period which he regarded as the "most memorable and instructive" of his life. With reference to the Louisiana purchase Decatur is said to have uttered strange opinions—opinions for which partisan blindness due to Federal connections must be the best excuse, especially if he is correctly quoted as wishing that the mouth of the Mississippi had been left to England. The conquest of Canada would, he said, deprive us of a country, leaving us "without local attachment, without national honor," exposed to anarchy, disunion, and military despotism. Such notions were partisan rather than personal, and Decatur's biographer has an easy task in proving that these hazards would be escaped if we did not become "a great military and conquering nation," but contented ourselves with expanding within continental limits and linking settlements by steam communication by land and water.

There is obviously some happy mean between the narrow apprehension of the Federalists of 1804 and the demands of the strategist for the acquisition of "an almost endless succession of what, in technical language, are called 'keys' to some position," or as Lord Cromer quotes the late Lord Salisbury, "to try and annex the moon in order to prevent its being appropriated by the planet Mars."

In 1805 few were confident that the American Union would endure. Napoleon predicted disruption; even Jefferson thought that it might come without total ruin. The worst of the Federalists were planning the "reunion of the Northern States" and seeking to employ Aaron Burr to detach New York from Democracy and the Union. In the last years of Coleridge's life the danger lay in another section. In 1833 it was the South which, in opposition to the system of protection, was inclined to renounce the Union and seek a commercial alliance with England. Coleridge thought then that there could be no "national fusion of the Northern and Southern States," though he found it hard to give up the "august conception" of a nation of a hundred millions of freemen stretching from the Atlantic to the Pacific, "living under the laws of Alfred and speaking the language of Shakespeare and Milton." These were by no means the visions of a clouded intellect, though uttered at the close of the poet's life.

Decatur did not long enjoy his domestic felicity at Norfolk. The year 1807 brought humiliation to every naval officer and to every American not besotted with the baser passions of politics. A demand was made for the surrender of four seamen lately enlisted at Norfolk, as deserters from British men-of-war. Decatur refused to intervene, and Commodore James Barron, to whose flagship the *Chesapeake* they had been assigned, reported that they were Americans who had been impressed into the British service. The affair remained in suspense until the *Chesapeake* encountered the *Leopard* at sea and was compelled to surrender three of the recruits. The ensign had to be lowered before Commodore Barron or any of his subordinates found means to fire a single gun from the loaded battery of the *Chesapeake*.

In the attempt to fix the responsibility for the neglect which made such a tragedy possible Decatur bore a part more prominent than his rank in the service seemed to justify. Though junior to Barron, he sat as a member of the court-martial which tried

that officer after attending the proceedings of the court of inquiry and forming and expressing an unfavorable opinion. He was not challenged by the accused either on that ground or because of his lack of seniority. The majority of the court—which included lieutenants as well as master-commandants and captains—was made up of juniors. The court deliberated carefully and honestly, showing unprecedented care in observing the forms of law and justice, though their action in appending remarks to the finding on each specification has not been found desirable in practice—and Commodore Barron was acquitted of every charge implying cowardice, but convicted of neglecting to prepare and clear his ship for action after meeting the *Leopard*. If Decatur's opinion sustained all the charges, he must have voted in a minority, but he was ready to maintain the decision of the court against all critics.

Decatur succeeded Barron in command of the *Chesapeake*, and hoisted his broad pennant as commodore at the age of 28. As all British men-of-war had been forbidden to hover on our coast, our squadron was kept in home waters, where some of its vessels had to enforce the embargo, which was ordered with a view to bringing the encroachments of European belligerents to a close by the complete cessation of commerce. The measure proved ineffectual, and there was no alternative but war or perpetual humiliation.

The difficulty was to choose an antagonist. Napoleon had been as arbitrary and unjust as the cabinet of George III. Otherwise a renewal of the French alliance might have seemed possible. Cobbett taunted the British ministry with warnings that their policy might result in such men as Decatur, Hull, and Bainbridge cruising in command of French ships-of-the-line, a contingency which had some significance after Trafalgar. Decatur never manifested any French inclinations, in spite of his ancestry, but Barney might have been induced to resume his rank of commodore in the Imperial Navy—especially if he could have kept up a fleet of privateers to harass British commerce—and others would have been eager to control the powerful naval armaments which Napoleon was unable to employ. But the whole of New England would have denounced the French alliance as the culmination of Jeffersonian impiety, and there was plenty of evidence that the Emperor was not a man to be trusted.

There was nothing to do but to arm and fight it out, and the personnel of the navy—inspired by indignation at the outrageous

impressment of American seamen and by instinctive rivalry with the men who commanded the sea—was better prepared to fight than Congress was to supply them with ships and guns. Doubtless they preferred to fight England rather than deal with France either as an ally or an enemy, but they demanded frigates and a chance of prize-money.

The disaster of the *Chesapeake* was followed by an appropriation for the construction of gunboats to make the total number over 250, the estimate for 10 frigates having been ruthlessly struck out. The animosity and contempt which every allusion to the unlucky flotillas of 1812 has provoked in all naval circles ever since demands a little attention. Decatur's acceptance of employment in this despised service in 1806 seems to have been regarded as due to the attraction of the lady whom he was about to marry. Yet it remains true that he had won his reputation and rank by service in vessels of that type which Preble had been forced to purchase or borrow from the most worthless navy in Christendom, that of Naples and Sicily. Cooper states that, "the gunboats, at first, were well received in the service, since they gave enterprising young officers commands," but he declared later that they "threatened destruction to the pride, discipline, tone, and even morals, of the service. Mackenzie insists also that, by keeping officers from cruising and from contact with foreign navies, they deprived them of means of improvement in their profession. For all ranks, by "isolating them in numbers too small for discipline, and confining them to harbors," they "encouraged idleness and dissipation."

Yet the resort to gunboat armaments was not unnatural under the circumstances. Thrift made a cheap armament more or less popular, but the system promised a certain degree of protection to coasts and harbors ravaged thirty years before under the order of the King, who was so eager to "distress the Americans." For a strategic effort there were lacking both plans and resources. Commerce-destroying was a promising operation, but the current doctrine was that it might be left to voluntary enterprise. The intermediate system of arming frigates to attack hostile cruisers not superior in force and to prey on the enemy's trade served, indeed, to develop *esprit de corps* and to create prestige for our navy which had their bearing when the season for negotiation arrived. But it did not sweep the seas or even keep the coast clear of the enemy's foragers. As for commerce-destroying, the results were

ineffective, our own losses being so great that the maritime towns of New England remained irreconcilable.

Of course the gunboat system, with its localized groups, involved the costly multiplication of armaments. As a distinguished authority on fortification argued in 1851, in oppositon to plans to defend the coast by increasing the navy, there would have to be as many squadrons as there were ports to guard and each would have to be as strong as any force that could be sent to make an attack—an argument which denies the value of a mobile force and the first principles of naval strategy. Yet it has been revived by those in authority in the present generation. It is curious to note that Fulton was at hand to supply the elements of a modern mobile defense at the very moment when this experiment was tried. Whatever his submarines and torpedoes might have been worth, he had demonstrated the utility of steam propulsion before 1812, and Decatur, for one, believed in his projects. Even the "long twenty-fours" of the gunboats might have harassed the invaders effectively had those vessels been supplied with motive power. An eminent professor of history at Cambridge was asked to point out the most critical moment in the annals of England: his reply was, "when Fulton offered Napoleon the means of ferrying the Army of Boulogne across the channel." But the era of invention had not been welcomed in any navy until long after Decatur was dead.

There is no need of attempting "another book on the war of 1812." If Cooper's narrative be corrected by the broader light of Admiral Mahan's investigations and by the exposition of the political situation in the volumes of Henry Adams, the naval student will be well equipped with knowledge of the period.

It only remains essential to note Decatur's part in the contest. His capture of the *Macedonian* in October, 1812. The *United States* was discreetly handled to make the best of her superiority in armament and marksmanship, and she lost only twelve men, while the loss of the *Macedonian* amounted to 104. The two captains had compared their batteries in friendly discussion before the war, and Carden had insisted that the *United States* could not fight the twenty-fours of her main-deck battery as effectively as his men could their long eighteens. Decatur treated his captives with courtesy and generosity, buying Carden's cabin stores for $800, regardless of the tradition which made the "plunder" of

the cabin the perquisite of the victorious commanding officer. Decatur wrote a modest official report, and his letter to his wife is a pretty effusion. The colors of the *Macedonian* were, however, carried to Washington and laid before the Secretary of the Navy by his son, Lieutenant Paul Hamilton, at a public ball with somewhat too much of theatrical display.

With his prize and the *Hornet* added to his command Decatur hoped to cruise as a commodore. But he was blockaded by a superior force at New London, and neither of his frigates got to sea again during the war. There were challenges from both sides, Decatur naming the *Endymion* and *Statira* as suitable antagonists, and the British Commodore, Nelson's Hardy, objecting to the *United States* on account of her heavier carronades. Decatur, who had already reduced his battery, offered to make the weight of metal thrown at a broadside equal; but the match could not be adjusted, either for the heavier or the lighter frigates, the latter having been built as sister ships.

Decatur's correspondence with Hardy was conducted on courteous terms; and another British captain was induced to take measures for the release of an American seaman, who, though impressed and unwilling to fight against his country, had been made a boatswain's mate. The American challenges were discreetly worded, disclaiming personal animosity and avoiding controversy. One of the British captains, however, professed his readiness to fight for "the honor of my King, the defense of my country, engaged in a just and unprovoked war, and the glory of the British flag." This indiscretion was rebuked by Decatur in a letter to Hardy: "Whether the war we are engaged in be just, or unprovoked on the part of Great Britain, as Captain Stackpole had been pleased to suggest, is considered by us as a question altogether with the civilians." In declining to embark in such discussions, Decatur gave an illustration of the principle he afterward formulated as "our country, right or wrong," as well as an example of good manners. Sir Thomas Hardy met him with the like generous feeling, adding the assurance that, "I shall hail with pleasure the amicable adjustment of the difference between the two nations."

This was a notable advance upon the utterances of British admirals who felt it a duty to revile, as well as to distress, the "American rebels" of an earlier generation. Rodney had written

in 1780 that, "You must not expect an end of the American war till you can find a general of active spirit, and who hates the Americans from principle . . . . Nothing but making the Americans feel every calamity their perfidy deserves can bring them to their senses." By the capture of St. Eustatius in the spring of the next year Rodney thought himself in a position to "scourge them for their perfidy, and scourged they shall be," his method being to keep the Dutch flag flying until he had taken scores of American traders. At the same period Arbuthnot, generally accounted a duller man than Rodney, warned those in authority that Cornwallis would have to "restrain the rapacity of the troops" to win the submission of the provinces. He also denounced a proposal said to have been made by the army to the navy for "a division of such effects as may be found in the country," adding, "I tremble at the consequences."

Even after peace was made and American independence recognized similar feelings animated British naval officers to enforce the Navigation Act in its harshest clauses. Thus Nelson, in defiance of the interests of the West Indian colonists and the orders of his admiral, declared, "I for one, am determined not to suffer the Yankees to come where my ship is; for I am sure if the Americans are admitted to any kind of intercourse with these islands, the views of the Loyalists in settling Nova Scotia are utterly done away." He adds that his superior had no hesitation in taking his share of the prize money gathered by his refractory captains, and that he was officially commended for their unauthorized activity.

The question of prizes was apt to confuse the minds of all naval officers of that age. Mackenzie says in his life of Perry that, "The British Navy had been demoralized by the extensive system of plunder carried on under the orders in Council, and a predatory and freebooting spirit had become a prevailing characteristic of it." He adds that the lack of resistance had "fostered an insolent and overbearing demeanor" among its officers. These injuries and insults were denounced in a circular which Commodore Rodgers was directed by the Navy Department to communicate to his officers and crews in August, 1810, with special reference to the "inhuman and dastardly attack on our frigate *Chesapeake*." This invitation to "vindicate the injured honor of our navy," may have had an unfortunate influence in bringing about the engagement between the *President* and the *Little Belt* a few months later. Ap-

peals to passion might be justified as a war measure if they were likely to be of any utility—which is not apt to be the case; before hostilities begin they are dangerous as well as melodramatic.

Since Decatur could not escape the blockade of New London even with the help of Fulton, whose plans for a steam cruiser met with his approval, he welcomed an order to command the *President*, and dismantled the two frigates after a year wasted in port. The crew of the *United States* also joined the *President*, which sailed from New York on January 14, 1815. Two days later she was in the hands of the British. After a running fight with the leading ship of the blockading squadron, the *Endymion*, it was found that injuries received by grounding on the New York bar hindered the *President* from sailing or manœuvering to escape capture; she carried parts of her false keel athwartships, and her antagonist was always able to choose his position. Yet the result of an action which lasted two hours and a half was not altogether in favor of the British frigate. Decatur crowded sail to escape in the darkness, but found himself in the midst of the enemy before midnight. After receiving one broadside from the *Pomone*, which took up a position within musket shot on the starboard bow while another frigate lay in a raking position astern at two cables' distance, the *President* hauled down her colors. Other vessels of the enemy were within gunshot, including one "razee" or ship-of-the-line. The *Endymion* did not attempt to close with her former antagonist, but the official reports suggest she would have made the capture "had none of the squadron been in sight." A repetition of this "calumny" and other derogatory remarks while the *President's* officers were detained at Bermuda led one of the youngest of them to resort to "the summary and midshipmanlike process of severely caning the government editor."

If Decatur's account of the conditions which compelled him to surrender be accepted, as it was by contemporary opinion, the finding of the court of inquiry, commending his "determined resolution and heroic courage," need excite no controversy. In a notable volume on the naval campaigns of this war, published a generation ago and adopted as a text-book in many colleges, it was suggested even in the index, that Decatur acted "rather tamely," an opinion adopted from James, and the wish is recorded that Perry or Porter had commanded the *President*. The views of James are by no means judicial; in this case he declared that De-

catur's defense, in action and in his report, had reduced his name, "in the opinion of every well informed European, quite as low as that of Rodgers, Bainbridge, or Porter." Another British writer, whose twentieth century title-page puts his prejudice out of date, describes the capture as fortunate in enabling "British officers to show their countrymen the kind of marine monsters, misnamed frigates, against which the *Guerriere*, *Macedonian*, and *Java* had been rashly sent to contend." The *President* (late *Gannet*), now in commission with additional officers enough to man Decatur's old battery, can hardly serve this historical purpose.

The great authority of Admiral Mahan maintains the doubt as to whether Decatur did not surrender before his powers of resistance were exhausted. Admitting that he beat off the *Endymion*, it is questioned whether he continued to deserve commendation and whether the moral tone of the service does not suffer, "when the attempt is made to invest "with a halo of extraordinary heroism" such a showing as Decatur made. This view hardly accords with the current practice of spreading this halo over the margin of otherwise commonplace pages in the "Navy Register." But in 1815 the nation made no difficulty in accepting Decatur as one of its heroes along with all whose comrades who had fought British frigates. Nor did he lose his hold on the gratitude or the imagination of the public during the lifetime of those who had seen his gallant figure.

While the war with England lasted nothing had been done to protect American commerce from the Barbary pirates, and the Algerines had begun to make prizes. A force adequate to the purpose was sent abroad to check such depredations, nearly a dozen vessels following Decatur's flagship, the *Guerriere*, to the Mediterranean. When the squadron reached Algiers in June, 1815, the commodore was able to inform the Dey that two of his corsairs had already been seized by way of reprisal. Such promptness had its reward, and an exceptionally favorable treaty was negotiated without delay. A few months later the British fleet under Lord Exmouth anchored at the head of the mole and swept the harbor and streets of Algiers. Piracy and the enslavement of Christian captives could no longer be practiced. Decatur's popularity was greatly increased by this cruise, which was the culmination of a policy framed by Jefferson before the adoption of the constitution of the United States. In 1786 he had

urged a combination of continental powers to suppress the ravages of the Barbary pirates, and had gone so far as to promise the aid of an American squadron for an attack on Algiers. The plan failed partly because there was no expectation of British support, and partly, perhaps, because of lack of confidence in American armaments.

Upon Decatur's return from the Mediterranean in the autumn of 1805 he was appointed a member of the Board of Navy Commissioners, and continued in that employment until his death. He appears to have shown a lively interest in inventors, particularly those who proposed improvements in ordnance, and a righteous horror of those who sought to purchase his favor. Doubtless he had much to say in regard to promotions and assignments to duty, and his standard in such matters was high. Of political prejudice there is no trace in his record at this period. He is said to have made use of his intimacy with President Madison to enlarge his views of the elements of the constitution. It is unfortunate that the man who had the largest part in framing that document should—next to the author of the Declaration of Independence—be the most unpopular of our presidents in any branch of the public service. Jefferson said of the navy in 1801, "It is the department I understand the least," and in the absence of a competent adviser, he made, with the advice and consent of Congress, many blunders in its development and employment. Madison was badly served by his unlucky generals, and he did not entertain the pernicious fancy of directing campaigns out of his own head. But both were loyal to the national honor when half the wealth and intellect of the nation were disloyal. If Decatur had ever been a Federalist he had never been tempted to follow Gouverneur Morris in his project of forcing New York out of the Union by the invasion of troops from England and Massachusetts or to listen to the advocates of a separate peace for the New England states during the war of 1812.

Decatur also desired to cultivate his mind by general reading; feeling, he said, that "my rank is ahead of my acquirements." For professional knowledge he had little anxiety, but to overcome other deficiencies he had applied, after his return from Tripoli, to the venerable and philosophical—though controversial—Dr. Benjamin Rush, for a list of books, "historical, and others of a standard nature," fit for his perusal. It was a modest request, and one

that no bookish man could find it in his heart to refuse. But it may be questioned whether Decatur, or any man of active habits, ever got much good from such a list. "If you care for books, you will read all of them," is not the worst formula of advice for such an inquirer, as anyone may learn by comparing the first volumes of "works which no gentleman's library should be without" with their companions, on the shelves of a public library. An occasional hint as to method may serve some purpose now and then, and the real object of this paper—though veiled in a good many pages—is to recommend the biographical method of approaching the facts of history. First find your man, any man whose life meant something, and when sure of a vital personal interest in him, find out what you can about the world he lived in, the friends he knew, and the causes he would have died for—if he was one who had any purpose in his living or dying. Standard histories will not answer unless there is some question to ask them—and then they are apt to give the answer wrong. So we cannot hope much from any learned doctor's list of books.

Decatur doubtless enjoyed life in that city of magnificent distances which was striving to recover from the devastations of the British in 1815. He lived for a time in one of the Seven Houses on Capitol Hill, where he had Madison for a neighbor. Then he built a mansion on the President's Square—Lafayette Square, one calls it now—and lived sumptuously in the enjoyment of health, reputation, and pecuniary ease. He took much exercise, scorning an umbrella when exposed to a hot sun, for the sake of the hardihood requisite for his profession, and he was noted for his "soldierly grace" and polished manner, these too being elements of professional standing. Finally, we are assured of his strictly temperate habits and even temper, special advantages for one who lived always on the edge of the duelling volcano.

It is strange how little we know of the customs and humors of the captains of 1812. Biographies were often written by the ladies of the family or their favorite pastors, and the editors of all memoirs were men of clerical antecedents like Jared Sparks, or men of rhetorical fervor like Wirt and Everett. We learn, indeed, that Washington was also strictly temperate, "rarely drinking anything after dinner, except a few glasses of punch," and we would be thankful to know that much concerning the convivial tendencies of our naval heroes. But we do not even know how

they swore. The favorite oaths of English monarchs from William the Conqueror to George IV are as much matters of history as those of the Crusaders who followed Saint Louis, or the Leaguers who fought against Henry IV; but the generation that knew Wellington's practice of bluntly profane speech was urged to discredit the witnesses who had heard Washington denounce General Charles Lee in fiery terms—which would have been sharper if he had known that the man who fled from Monmouth field was a traitor rather than a poltroon.

It would be worth knowing whether the discipline and morals of American men-of-war resembled those depicted by Marryat—whose sketches are confirmed by contemporary memoirs like that of Commander Gardner, published by the Navy Records Society—or whether they had any likeness to the unfragrant customs described by Smollett and applied at a venture in Macaulay's overrated account of the navy of Charles II to men who had been trained under the Commonwealth. Certainly Commodore Elliott, as painted by Mackenzie, resembles Commodore Trunnion of the novel rather than the Mings or Narborough of authentic history. Puritanism never prevailed in the sea service, apparently, though the frequency of duels and the floridity of after-dinner toasts and species are the chief indications of the dominance of the spirit of the convival cavaliers. Both fighting and drinking were modes of initiation which an officer of the newest navy would rarely decline when thrown into the company of foreigners and summoned to comply with tradition. In fact the latest gossip about duels in the army and navy of the United States appears to relate to the substitution of the duel for the ordeal of drink when declined by temperate youth. Both ordeals are academic survivals among the student corps of German universities at the present day—with a mild beverage and more or less defensive armor to mitigate the ceremonial.

Decatur was never far from the "field of honor" even in the era of good feeling which followed the war of 1812. In his own household dwelt the children of his sister, orphaned by a duel. Their father was a marine officer, Captain M'Knight, and their uncle had to act as Perry's second in a duel with another member of that militant corps in October, 1818. The commodore had struck his subordinate in his own cabin—where Mackenzie suggests that a rough and tumble contest might have best solved the

difficulty. An apology having been rejected as advised by spirited comrades, Captain Heath sought redress by court-martial. Both offenders—for Heath also was tried—were sentenced to be privately reprimanded by the commander-in-chief. Heath felt that his wrongs had not been redressed, and after issuing a vindictive pamphlet, sent the Commodore a challenge. A meeting took place at Hoboken two years after the original provocation. The men were placed back to back and directed to advance five paces at the word of command. Then they were to turn and fire; but Perry saw fit to refrain from firing and Heath fortunately missed. Decatur, who acted as Perry's second, was directed to explain that his principal had long been resolved to offer atonement in this tardy and illogical, but chivalric fashion. Perry died of yellow fever a few months later, leaving an unfinished quarrel to complicate Decatur's service relations.

The battle of Lake Erie had given rise to a controversy between Perry and the second in command, Captain J. D. Elliott, of Maryland. The literary controversy outlived both officers. In fact it could not terminate while Cooper and Perry's biographer were both alive. Elliott had secured a formal vindication both from his superior and from a court of inquiry in due season; but Perry was induced to prefer charges in 1818, charges which President Monroe was unwilling to have tried by a court-martial. As Perry refused to accept a challenge while there was any chance for a trial, the affair was unsettled when he sailed for the Orinoco. The opinion of the service and the verdict of the historian seem to sustain Perry, though it must be regretted that he had not been consistent in his expressed judgments of Elliott's conduct and that he had been forced to rely upon the mass of hearsay and prejudice contained in the affidavits of his subordinates from Rhode Island. Such quarrels when embittered by partisan or sectional passion, are apt to exhibit an excessive vitality, and there were high-spirited old gentlemen living on the banks of Lake Erie less than forty years ago who were sure that Elliott was the real victor of September 10, 1813.

Elliott chose to fancy that Decatur had interfered to baffle his efforts to obtain satisfaction after Perry preferred charges. It was a suspicious era, and it is hinted that Heath and Elliott may have formed a combination to protract the strife which culminated in the duel in which Decatur fell. From the distressing

correspondence between Perry and Elliott, edited by a hand unfriendly to the latter, we learn that, while Elliott was by comparison almost illiterate, his opponent had little advantage in self-restraint. Considered either in the light of the code of honor or the nobler standards of discipline, these letters are sad reading. Elliott's phrase "epistolary blackguardism" need not be adopted, but there is abundant proof that the fighting code utterly failed to chasten the diction or repress the ill-tempered fluency of prospective combatants. Unless it could do this it cannot be credited with any effective influence in favor of good manners.

Its failure to elevate controversy is also shown in the fatal correspondence between Decatur and Barron which began in June, 1819, and lasted throughout that year. Decatur could write 3000 bitter words in a single letter, to which Barron was forced to reply with almost twice as many after a contest had become inevitable. They were briefer at first, Barron merely asking whether it were true that Decatur had said he could insult him with impunity. Decatur replied that he never said that of any man, whatever he might have said "in the very frequent and free conversations I have had respecting you and your conduct." This phrase Decatur seemed fond of repeating, always insolently underscored, but Barron chose to consider the reply satisfactory, until he learned that Decatur was circulating the correspondence in Norfolk, including an expression of "perfect indifference" to the motives of Barron and his informants.

In October the season of long letters began, and Barron's motives were fully revealed. After suspension from rank and pay for five years on account of the *Chesapeake*, and a longer absence from the country, he was now an applicant for naval employment suitable to his rank. Decatur had not only opposed this application, but had sought to alienate Barron's friends, including "the Virginia delegation in Congress," and to discredit him in the service and his native place. Decatur's historical statement in reply was long and severe, especially as a reply to a challenge, yet he could ask Barron to make "laconic" replies a few weeks later. After defending the sentence of the court of 1807, Decatur went on to attack Barron's conduct during his seven years' exile. Though drawing pay he had not served during the war, had, in fact, remained abroad and sailed under British license, besides expressing himself as having been willing to allow the *Chesa-*

peake to give up the men claimed. He quoted somebody as denouncing Barron as a traitor. Barron disposed of the first two charges readily enough, and showed that he had offered his services to the Navy Department, but his return had been prevented by "circumstances beyond my control, which it is not incumbent on me to explain to *you*."

Since it has to be noted that both these honest gentlemen made charges on hearsay, that Barron appealed to Decatur for sympathy toward "my unfortunate female family, whose kindest entertainment you have frequently enjoyed," and Decatur saw fit to say that he had only gone to Barron's house once, when invited to accompany the Tunisian ambassador in 1805, and that he no longer felt the weight of obligation, it is only fair to record that both could express themselves more worthily upon one topic. Almost the only passages of these letters which can now be read without a sense of humiliation are those which condemn the code to which both were ready to offer the sacrifice of their lives. Decatur wrote, "I do not think that fighting duels, under any circumstances, can raise the reputation of any man, and have long since discovered that it is not even an unerring criterion of personal courage." Barron accepts this opinion of duelling: "I consider it as a barbarous practice, which ought to be exploded from civilized society." In the inevitable plea for exception, Barron has a distinct advantage: "But, Sir, there may be causes of such extraordinary and aggravated insult and injury, received by an individual, as to render an appeal to arms on his part absolutely necessary." Barron felt constrained, "by every tie that binds me to society"—he had already mentioned his "poor unfortunate children"—to seek redress in this fashion.

Decatur's plea was more obvious: "the man who makes *arms his profession* is not at liberty to decline an invitation from any person who is not so far degraded as to be beneath his notice. Having formed the habit of clinching each argument by an insult, he went on to add, "I will not consider this to be your case, although many think so; and if I had not pledged myself, I might reconsider the case." Such was Decatur's "dispassionate and historical" style. He wrote also that, since Barron was resolved to fight some one, he might better have made "this decision during our late war, when your fighting might have benefited your country as well as yourself." The reply was that Barron had been

hunted out and threatened with dismissal or death if he sought employment in the navy, "from what other purpose than to obtain my rank, I know not."

Disclaiming these sordid imputations, Decatur denied that he was "disposed to kill, out of my way," and pointed out that there were others whose existence was more obstructive than that of Barron, who, for his part, declared that he was not trying to fight himself into favor and that he had not selected Decatur with that end in view.

The inherent absurdity of the duel was no new discovery in 1819. Fifteen years before Hamilton had thrown his life away by consenting to meet Aaron Burr on the field of honor, admitting the irrational nature of the test, but protesting that he had an excuse based on the patriotic motive. The ability to be useful in future crises of public affairs was, he thought, "inseparable from a conformity with public prejudice in this particular." This is better than the personal plea relating to arbitrary notions of honor, but there is surely firmer ground for practical morality elsewhere. As Carl Schurz learned during his war experience, true heroism consists in self-sacrifice; "and the less expectation of reward or distinction there is connected with the act of self-sacrifice, the more genuine the bravery or heroism will be."

The later and longer letters of this painful correspondence relate to the question as to which officer was the challenged party. Decatur seems to have technical justification in warning Barron that the fight would have to be of his seeking; "and you must take all the risk and all the inconvenience which usually attend the challenger." Still he continued to wrangle over matters of fact and to show a curious disregard of the rules of evidence. Barron was right in reproving the introduction of hearsay testimony and rumors credited to "a female of my acquaintance." Both men were stimulated to this most pernicious form of literary production by the knowledge that their efforts were to find immediate publicity in the social coteries of Norfolk and Washington. Decatur even claimed the privilege of discussing the affair with the junior officers of the service. Had there been a sensational press to exploit the rumors in circulation and the letters exchanged, the result, one fancies, would have been that the deadly project of a duel would have been overwhelmed by universal ridicule and the catastrophe averted. Whatever the yellow jour-

nalist may mean, he is apt to write in a fashion which rouses the sense of humor which has always counted among our national attributes. But society is never very humorous in its instincts, nor is its influence altogether humane. Therefore the two commodores had to shoot each other.

If any censure is implied in these notes on the evidence it touches the system rather than the men. Decatur and Barron followed the code—though it cannot have been correct to indulge in interminable recrimination—and each of them had friends ready to guide them to the fray and a public to waste its admiration on their fatal resolution. The code is dead, fortunately, and beyond the reach of criticism. But those who credit it with allaying the irritations of social life, with subduing insolence, and with promoting discretion and reserve will do well to read the mass of correspondence cited in the biographies of Decatur and Perry—to say nothing of Elliott's memoirs. Whatever its rules may have accomplished in standardizing the military conduct of officers trained in coasting vessels or in the backwoods, whatever it may have done to enable such officers to vindicate the honor of the service to which they belonged when questioned by those who represented more ancient and aristocratic societies, it manifestly failed in providing a prompt solution of disciplinary quarrels or in advancing the amenities and decencies of the naval profession. Had Decatur been content to oppose Barron's application for a command—and his opposition seems to have had a sound professional basis with no personal difference beneath or behind it—he need not, except for the intrusion of a fantastic code of honor, have undertaken to give reasons—an art learned, perhaps, on the *Chesapeake* court-martial—nor need he have undertaken to vindicate his official action at the risk of his life. But with the duel confronting him, he would extenuate nothing and withdraw nothing, even when the proof was lacking.

Barron denied any purpose of fighting to improve his standing, but he had examples as well as provocations to sanction that plan. Thus, to take an aggravated case, Lord George Sackville (afterward Lord George Germaine), who was cashiered for what looked like cowardice at Minden, was able to re-enter public life, and even to undertake the management of the military campaigns of the American Revolution, chiefly because of his briskness in fighting a certain governor of Florida noted as an expert duellist. Dur-

ing the war of 1812 two volunteer generals of the American Army fought a futile contest on an island in the Niagara River. Among naval officers the temptation was no less strong. Commodore Barney, after a successful cruise as a privateer, applied in 1813 for the command of the flotilla in which he afterward won distinction; the Secretary of the Navy kindly gave him the name of a prominent citizen of Baltimore who protested against his appointment—evidently on the score of his service in the French Navy about 1800—and the calumniator received a ball in the breast from the irascible commodore's pistol. Had Barron done likewise as soon as his term of suspension came to an end, his fate might be reckoned happier than it now appears.

Barron was charged with tardiness in settling preliminaries, and it was intimated that he had made ill-health his excuse without valid cause. His actual plea was more affecting: "being on very familiar terms with my family, out of tenderness to their feelings I have written under great restraint," But in February, 1820, after a duel was decided upon, he had to report himself prostrated by a violent bilious fever. It was not until late in March that the seconds, Elliott and Bainbridge, were able to settle the deadly arrangements.

We are told that Decatur meant to spare his enemy, but it is evident that Bainbridge was not aware of any such intention. The distance was fixed at eight paces, not, Bainbridge wrote, on account of what had been said of Barron's defective sight, but because of some previous resolve of the strenuous second. A letter printed in the *Life of Decatur* contains a warning against a nameless person—manifestly Captain Elliott—and the advice that Decatur "should yield not the smallest particle of any right or privilege" in the duel. In fixing the place at Bladensburg, Decatur had written, "Their convenience will not be consulted." Under these uncompromising arrangements the meeting took place.

Standing face to face at eight yards distance, the antagonists disclaimed personal enmity and prepared to fire at the word. Bainbridge was to count up to three after the command fire, and he is said to have resolved to count quickly in the hope that both might miss. Probably he was not aware, as any naval captain would be now-a-days, by personal experiment or scientific theory, that the elder man—Barron was the elder by ten years, though Decatur had questioned the fact—was handicapped by quick counting.

At the command "Two" both fired, and a moment later both fell. As they lay helpless, awaiting the surgeons' report, the two men fell into conversation; formal words of forgiveness passed, and it is said that Barron then explained to Decatur the reason why he had failed to return to take part in the late war, declaring that he had been detained abroad by his debts and the lack of means to make the voyage. Decatur's wound through the abdomen was soon recognized as fatal. Barron was shot through the hip, and the likeness of the wound to that received by the mate who was Decatur's first antagonist has been cited to show that Decatur did not mean to kill. It may be so, but it would seem doubtful whether a man who had had little pistol practice in twenty years could trust himself to aim with such precision.

Decatur died in his own house, refusing in his agony to see his beloved wife. She spoke to no soul during the rest of her stay in Washington, whence she made haste to remove, selling her home and all its sumptuous equipment. The funeral was made as stately as the resources of the capital would allow. The extravagant proposals of John Randolph for unusual public honors failed to secure the approbation of Congress after a friendly but conscientious representative had pointed out that, "he died in violation of the laws of God and of his country," a view which his loyal biographer tries to qualify: "And yet was there not another law, lower than the law of God, yet higher than the law of his country, whose stern mandate he had obeyed? Was there no constraining law of public opinion?" The men who appealed to the "higher law" a generation later, when the Fugitive Slave Law was in question, were on firmer ground than the advocates of duelling as a sacrifice to an ignorant public opinion. The last word of the tragedy was fitly spoken by the victim, who wished that he had fallen on the quarter-deck and died in defence of his country.

Commodore Barron at last got his case before a court of inquiry in 1821, and the finding was that his absence from the United States during the war had been "contrary to his duty as an officer in the navy." Nevertheless, he was appointed to command the Norfolk Navy Yard and to other duty on shore. After 1839, when he had been a captain 40 years, he was the senior officer of the navy. His long life covered twice the years of Decatur's more fortunate career, and he doubtless grew old with a good conscience.

though his naval career had been more or less disappointing. Duelling was not quite out of fashion when he died in 1851, and there was no disposition to inflict retrospective censure upon a Virginian who had killed his man—even though the victim had been a notable and gallant figure.[1]

The seconds who had done so little to mitigate the strife also lived to old age. Bainbridge died in 1833. His clerical biographer suppresses all mention of the duel, and even conceals the presence of his hero in America in the year of its occurrence. Others have regretted that the letters concerning the affair were ever made public. But the publication has a practical value in discrediting the code which made brave and loyal men capable of deeds of darkness.

Commodore Elliott had a long and stormy career in the service. He had been cleared by a court of inquiry—the same court which commended Decatur's handling of the *President*—of all aspersions upon his conduct in the battle of Lake Erie, but the revival of those charges by Perry just before his death in 1819 left Elliott's reputation insecure. He was not liked by officers who served under his command, and in 1840 he had to stand a trial by court-martial upon a curious assortment of charges and specifications. Among those upon which he was convicted were several relating to silver plate presented him by the crew of his flagship and others charging him with importing to the United States from Minorca on the gun-deck of the *Constitution* "twenty-two animals, consisting of jacks, jennies, horses, mares, and colts," to care for which a number of men were excused from watch and quarters. Somehow, Perry's biographer thought the findings of the court pertinent to the discussion of the battle of 1813. They are rather inconsistent with the verdict of standard biographical collections to the effect that Elliott, though a man of kind heart, was a "rigid disciplinarian."

Now that the personal narrative has been discussed, the interpretation of Decatur's most notable public utterance may be considered. At a dinner at Norfolk in April, 1816, after a round of

[1] The curious fact that Barron was President of the court that tried Porter in 1825, the latter having been a member of the court that awarded the sentence in the case relating to the affair of the *Chesapeake* in 1807 appears in the article by Lieutenant-Commander Beach in the Proceedings for December, 1907.

toasts which included such "appropriate sentiments" as, "National glory! A gem above all price, and worthy every hazard to sustain its splendor," Decatur, as the guest of honor, struck a deeper historic note by his response: "Our country! In her intercourse with foreign nations, may she be always right; but our country, right or wrong." Others had in mind Decatur's facile triumphs in dealing with the Dey of Algiers, but he had not forgotten the war of 1812, nor could he forgive the politicians and preachers who had urged the Federalists of New England to refuse loyal support to the government during that contest. The rebuke was deserved, and in Virginia, it was sure of its meed of applause.

As a universal definition of loyalty to a national ideal it lacks precision. Yet it may serve to indicate the path of every sworn servant of the republic as well as any maxim or sentiment then extant. But it must be noted that those who heard and applauded Decatur after the last war with Great Britain failed to make it clear to their posterity where their country would be found in 1861. The later generation of Virginians saw more than one solution for that problem, and died gallantly in defense of irreconcilable principles. For a more direct answer to any doubtful question of allegiance the reply of General Grant when asked whether he would side with the President or with Congress in case of a resort to force may be cited: "that would depend," he said, "upon which was the revolutionary party"—a maxim which will never become obsolete.

In detaching the last phrase of Decatur's sentiment from its verbal and historical context, there is, perhaps, some risk of perverting the moral. Manifestly, the soldier and the citizen must follow and obey when the nation is engaged in a foreign war without considering too curiously the origins of strife. But to discover some chance to seize wealth or prestige in the name of the country, and then to sweep aside the morals and equities of the case by the misapplication of any sentimental phrase, surely involves either national or personal dishonor. Many a naval commander has rejected such opportunities to provoke war by unjustifiable prize-taking or territorial aggression, and others may be helped by their self-denying example. All Americans knew in 1816 that international law and common justice had been thrown overboard by both belligerents in the Napoleonic wars when there was any ques-

tion of the claims of neutral commerce. It was known, also, that some of the worst abuses were committed for the sake of personal advantage and private spoil. Yet because foreigners were the chief sufferers, unscrupulous naval officers were allowed to enrich themselves by the "safe booty" of the neutral trade. Against any trickery of this sort, against the use of falsehood to embitter international differences, and against any tendency to mask selfish and ignoble passions under the garb of patriotism, the whole life of Decatur was a protest.

(Extract from *The Friend* by Samuel Taylor Coleridge. Essay IX. 1818. First Section.)

A letter received at Malta, from an American officer of high rank, who has since received the thanks and rewards of Congress for his services in the Mediterranean:

GRAND CAIRO, December 13, 1804.

SIR.—The same reason which induced me to request letters of introduction to his Britannic Majesty's agents here, suggested the propriety of showing an English jack at the main top-gallant mast-head on entering the port of Alexandria on the 26th ult. The signal was recognized; and Mr. B—— was immediately on board.

We found in port, a Turkish vice-admiral, with a ship of the line, and six frigates; a part of which squadron is stationed there to preserve the tranquility of the country, with just as much influence as the same number of pelicans would have on the same station.

On entering and passing the streets of Alexandria, I could not but notice the very marked satisfaction which every expression and every countenance of all denominations of people, Turks and Frenchmen only excepted, manifested under an impression that we were the *avant-couriers* of an English army. They had conceived this from observing the English jack at our main, taking our flag perhaps for that of a feint, and because as is common enough everywhere, they were ready to believe what they wished. It would have been cruel to have undeceived them; consequently, without positively assuming it, we passed in the character of Englishmen among the middle and lower orders of society, and as their allies among those of better information. Wherever we entered or wherever we halted, we were surrounded by the wretched inhabitants, and stunned with their benedictions and prayers for blessings on us. "Will the English come? Are they coming? God grant the English may come! We have no commerce—we have no money—we have no bread! When will the English arrive?" My answer was uniformly, Patience! The same tone was heard at Rosetta as among the Alexandrians, indicating the same dispositions; only it was not so loud, because the inhabitants are less miserable, although without any traits of happiness. On the fourth, we left that village for Cairo, and as well for our security as to facilitate our procurement of

accommodations during our voyage and our stay there, the resident directed his secretary, Captain V——, to accompany us and give us lodgings in his house. We ascended the Nile leisurely, and calling at several villages, we plainly perceived that the national partiality, the strong and open expressions of which proclaimed so loudly the feelings of the Egyptians of the sea-coast, was general throughout the country; and the prayers for the return of the English as earnest as universal.

On the morning of the sixth we went on shore at the village of Sabour. The villagers expressed an enthusiastic gladness at seeing red and blue uniforms and round hats;— the French, I believe, wear three-cornered ones. Two days before, five hundred Albanian deserters from the viceroy's army had pillaged and left this village; at which they had lived at free quarters about four weeks. The famishing inhabitants were now distressed with apprehensions from another quarter. A company of wild Arabs were encamped in sight. They dreaded their ravages and apprised us of danger from them. We were eighteen in the party, well armed; and a pretty brisk fire we raised among the numerous flocks of pigeons and other small fowl in the environs, must have deterred them from mischief, if, as is most probable, they had meditated any against us. Scarcely, however, were we on board and under weigh, when we saw these mounted marauders of the desert fall furiously upon the herds of camels, buffaloes, and cattle of the village, and drive many of them off wholly unannoyed on the part of the unresisting inhabitants, unless their shrieks could be deemed an annoyance. They afterwards attacked and robbed several unarmed boats which were a few hours astern of us. The most insensible must surely have been moved by the situation of the peasants of that village. While we were listening to their complaints, they kissed our hands, and with prostrations to the ground, rendered more affecting by the inflamed state of the eyes almost universal among them, and which the new traveller might venially imagine to have been the immediate effect of weeping and anguish, they all implored English succor. Their shrieks at the assault of the wild Arabs seemed to implore the same still more forcibly, while it testified what multiplied reasons they had to implore it. I confess, I felt an almost insurmountable impulse to bring our little party to their relief, and might perhaps have done a rash act, had it not been for the calm and just observations of Captain V——, that, "these were common occurrences, and that any relief which we could afford, would not merely be only temporary, but would exasperate the plunderers to still more atrocious outrages after our departure."

On the morning of the seventh we landed near a village. At our approach the villagers fled; signals of friendship brought some of them to us. When they were told that we were Englishmen, they flocked around us with demonstrations of joy, offered their services, and raised loud ejaculations for our establishment in the country. Here we could not procure a pint of milk for our coffee. The inhabitants had been plundered and chased from their habitations by the Albanians and desert Arabs, and it was but the preceding day that they had returned to their naked cottages.

Grand Cairo differs from the places already passed, only as the presence

of the tyrant stamps silence on the lips of misery with the seal of terror. Wretchedness here assumes the form of melancholy; but the few whispers that are hazarded convey the same feelings and the same wishes. And wherein does this misery and consequent spirit of revolution consist? Not in any form of government, but in a formless despotism, an anarchy indeed—for it amounts literally to an annihilation of every thing that can merit the name of government or justify the use of the word even in the laxest sense. Egypt is under the most frightful despotism, yet has no master. The Turkish soldiery, restrained by no discipline, seize everything by violence, not only all that their necessities dictate, but whatever their caprices suggest. The Mamelukes, who dispute with these the right of domination, procure themselves subsistence by means as lawless though less insupportably oppressive; and the wild Arabs availing themselves of the occasion, plunder the defenceless wherever they find plunder. To finish the whole, the talons of the viceroy fix on everything which can be changed into currency, in order to find the means of supporting an ungoverned, disorganized banditti of foreign troops, who receive the harvest of his oppression, desert and betray him. Of all this rapine, robbery, and extortion, the wretched cultivators of the soil are the perpetual victims. A spirit of revolution is the natural consequence.

The reason the inhabitants of this country give for preferring the English to the French, whether true or false, is as natural as it is simple, and as influential as natural. "The English," say they, "pay for everything,—the French pay nothing, and take everything." They do not like this kind of deliverers. . . . .

NOTE.—It is uncertain whether Decatur's name was attached to this communication when *The Friend* appeared as a periodical in 1809 or when it was published as a book in 1818. Later editions prepared by members of the Coleridge family have the name appended. In regard to Egypt the expectations favorable to an early occupation by the English were soon shown to be premature. In 1807 a British force invaded the country, but it was repulsed by the Turks and Egyptians when it advanced inland, and it was not thought worth while to keep a garrison in Alexandria, since even Rosetta expelled the English with heavy loss. Abercromby and Moore made short work in forcing out the troops abandoned by Napoleon in Egypt by advancing from Aboukir Bay in 1801, but the next expedition proved a failure. The land of Pharaoh did not fall into the hands of the English until 1882, and even then the invaders were unwelcome.

THE CONQUEST OF TERRITORY OVER SEAS.[1]

Should a nation having a strong navy wish to undertake operations of war on land, it must confine its aspirations to attempts upon the coast of the adversary if its army is numerically weak. Not having at disposal means sufficient for an invasion of the enemy's territory, it is only by accident that it can take possession of an island or of a position on the coast, the occupation of which will always remain precarious.

On the other hand, a nation having a strong military organization, but whose navy has been sacrificed to the army, will always be tempted to seek upon land a field of battle that it does not find on the sea. It will disdain those desultory operations that attack only the material interests of populations on the littoral, and will be possessed by the idea of throwing great masses of men into the enemy's territory in order to make use of its army.

For this reason it is the English who have given examples of operations against the coast; while it is France that holds the stage as soon as the question is one of attempting an invasion.

The history of the Franco-English duel affords the most remarkable example of the efforts made by a country to compensate for its maritime inferiority by a land struggle. We purpose reviewing the different phases of this long drama.

THE LANDING IN IRELAND (1689).—The accession of William III to the English throne marks the beginning of the series of maritime wars that was not to end until 1815, 126 years after.

James II, dethroned by his son-in-law, had taken refuge at the court of Louis XIV and had sought his support. The new king of England himself furnished the pretext for an intervention by entering the League of Augsburg.

[1] Chapter II, Part III, of *Étude sur la Stratégie Navale*, a recent work of Lieutenant René Daveluy of the French Navy, Translated by Commander H. S. Knapp, U. S. N. Translation revised by Chaplain J. M. F. McGinty, U. S. N.

Attention was first directed to Ireland. Tyrconnel had succeeded in maintaining that island under the authority of the Stuarts, with the exception of Ulster. It was therefore decided that James II should betake himself to Ireland, and that he should be followed by a small army, about which to organize the poorly disciplined Irish troops.

The king left Saint Germain February 28, 1689, "I wish," said Louis XIV on leaving him, "never to see you again." A division composed of some 10 ships under the orders of Gabaret, Squadron Commander, had been fitted out at Brest with the utmost secrecy. James II embarked with 400 French officers and 1200 Anglo-Irishmen; he took with him a good quantity of arms and munitions. Gabaret arrived at Kinsale March 22. After having disembarked the troops and material he left Captain Duquesne-Monnier on the spot with three frigates, and returned to Brest without having encountered a single enemy vessel. Such happy luck need occasion no surprise. War had only just been declared; nothing about the projects of Louis XIV had leaked out; finally it was the custom in those days not to commission ships until spring. By sailing at the beginning of March one was almost certain to find the sea entirely free, which happened in this case.

In the meantime the fleet was put in commission at Brest under the command of Château-Renault. It was composed of 24 ships, 2 frigates, and 6 fire ships. On May 6 it sailed, escorting a convoy that carried 7000 men.

The attention of the English government had been attracted by the landing of James II in Ireland and the fitting out of the ships at Brest. It hastily fitted out a squadron commanded by Admiral Herbert, the same who had taken over William of Orange from Holland to England. Herbert took station on lookout off Ushant, where he learned of the departure of the French and laid his course for the Irish coast.

Château-Renault had orders to disembark his troops at Kinsale or Galway; but, on March 9, near Cape Clear, he had information of the English squadron. The nearness of the enemy and the direction of the wind forced him to abandon his plan; he immediately resolved to take his convoy into Bantry Bay, where he anchored March 10 at 11 o'clock in the morning.

The light vessels began embarking the troops in order to transport them to the head of the bay close to the land. About four

in the afternoon the scouts signalled 27 sails which were tacking in to approach the land.

Château-Renault judging that the enemy would not arrive at the entrance of the bay before 24 hours, kept up the operations of disembarkation throughout the night. The next day he got under way at dawn and left the bay; but in order to cover his transports, he did not stand far off shore. The action began about 11 o'clock; it was rather confused, but finally the advantage rested with the French. Château-Renault gave up the pursuit of the enemy in order not to separate himself from his convoy, and took his squadron back to Bantry. After having picked up his frigates and fire ships he endeavored to overtake the English; but as they had taken refuge at Spithead to repair their damages he steered for Brest, where he arrived March 18, after an absence of 11 days.

Without drawing premature conclusions from this single expedition, we shall note that it was favored by special conditions. Ireland was an allied country; the disembarkation could thus be effected within an enclosed anchorage and upon any part of the coast; the population, instead of forcibly resisting the descent of the troops, favored it to the extent of its power. Had it been necessary for Château-Renault to undertake the disembarkation in a hostile country he would have been forced to do it on an uninhabited beach, which would have required a much longer time; nor would he have been able to modify his plans at the last moment by selecting Bantry in place of Kinsale, because it is not a matter of indifference to arrive at one point rather than another when gaining a foothold on territory occupied by the enemy. Despite this array of favorable circumstances, despite the great extent of coast of which the expedition could make use, our squadron narrowly escaped meeting the English at sea; and it is easy to imagine what would have happened.

What became of the little army landed in March?

Upon the arrival of James II Ireland arose, and the principal towns of Ulster quickly fell into the power of the Jacobites. The Protestants shut themselves up in Londonderry and Enniskillen until the situation in England should permit William to succor them. James II laid siege to Londonderry, but the place was well defended, and after three months the siege had to be raised (July 28). A month later Schomberg landed with several thousand

men, relieved Enniskillen, and pushed James II back to the borders of Ulster and Leinster. Thus the war dragged on, the ex-king fearing to give battle, Schomberg afraid to venture into the insurgent region.

THE SECOND LANDING IN IRELAND (1690).—In November the English Parliament voted appropriations in order to push the war with vigor, and William manifested his intention of going to Ireland at the beginning of the campaign. Upon the urgent request of James II, Louis XIV had decided to send fresh reinforcements on condition that he should receive an equal number of Irishmen in exchange for his regular troops. In March, 1690, Lieutenant-General d'Amfreville left Brest with 27 vessels, escorting a convoy carrying 6000 to 7000 troops under the orders of the Duke de Lauzun, and also a great quantity of arms and munitions.

In consequence of circumstances that would take too long in telling, not only had the Dutch fleet not yet arrived in England, but the English ships themselves were not in commission. D'Amfreville, therefore, encountered no opposition; he landed his troops at Cork on March 23, embarked the Irishmen in exchange, and returned to Brest.

After the arrival of Château-Renault, who brought the Eastern Squadron from Toulon, Tourville sailed from Brest with 70 ships to dispute the command of the channel with the English and the Dutch. At Beveziers[2] he encountered the enemy's fleet commanded by Herbert, and defeated it; but the very next day James II was crushed at the Boyne.

William III had reached Ireland the day of Tourville's sailing for Brest. He at once put himself at the head of his troops and, with 40,000 men, attacked James II, who had less than 30,000 men. Abandoning his army, James II fled precipitately to Kinsdale, where he found 10 French frigates.[3] He embarked at once and had himself taken to Brest, and from there he went to Versailles to ask for a new army. But Louis XIV, indignant at his conduct, refused him any aid and ordered Tourville to send ships to Ireland to repatriate the troops.

[2] Beachy Head is the English name for this sea fight.—Trans.

[3] It had been decided that, if Tourville should be the victor he would send twenty-five frigates to sweep St. George's Channel and intercept the reinforcements crossing to Ireland; the frigates at Kinsale were a part of this detachment.

After the defeat at the Boyne, the Duke de Lauzun had retreated to Galway while a simple French captain, Boisselot, shut himself up in Limerick with a handful of resolute men and arrested the victorious march of William. Lauzun was thus able to await the French ships without anxiety; these arrived at the end of August and took the troops back to Brest. Scarcely had the French troops left when Kinsale was taken.

At this time the allied fleet had taken refuge in the Thames, where Herbert has caused the removal of the buoys marking the entrance to the Thames in order to stop the pursuit by the French squadron. The victory of Beveziers thus had a direct influence upon the security of sea communications; and it is beyond question that the small French army would have been forced to capitulate if Tourville had been beaten.

ATTEMPT TO INVADE ENGLAND (1692).—During the campaign of 1691 the fleet remained on the defensive. Tourville made his three months' sortie in the Channel, which has remained celebrated under the name of the "deep-sea cruise," during which time he held a superior enemy in check without permitting the least damage to himself. But in 1692 there came a reversion to the idea of invasion. This time it was desired to land in England itself in order to finish the war at a single blow. James II repaired to Havre and la Hogue, where 30,000 men and 500 transports were assembled. The army was commanded by Marshal de Bellefonds, and Tourville had the duty of covering the passage with the fleet.

The disadvantages of the geographical situation of France, which have been pointed out in a preceding chapter, then made themselves felt. The Toulon detachment, being hindered by the weather, was not able to arrive at the date fixed. Tourville, whose departure had already been delayed nearly a month by reason of strained finances, sailed on May 27 with only 44 ships. Mishaps always have disastrous consequences. Troops are assembled, transports are ready to sail, there is nothing to delay departure except awaiting the arrival of the escort; but every day that passes represents an added expenditure and increases the enervation caused by delay. It results, then, that patience is lost; and, in order that all these preparations shall not have been made in vain, some hazardous venture is attempted. This is what happened.

The delay in commissioning the fleet had left to the Dutch time to effect their junction with the English; and when the French

fleet had doubled Cape la Hogue it found itself in the presence of 99 enemy ships. Tourville was defeated despite a magnificent resistance. The expedition was abandoned.

We shall not recall here the melancholy incidents that followed the battle of la Hogue and brought about the loss of 15 ships. Suffice to say that the result of this battle illustrates well that a fleet that has been defeated, but not destroyed, is completely negligible [1] for a long time, and that the demoralization that attends lost battles permits the victor to undertake with impunity the most hardy enterprises without running any risk.

The war with England lasted until 1712, with a short interval of peace from 1698 to 1702; but the miscarriage of this attempt at invasion took away from Louis XIV all idea of undertaking an operation of this sort again. It required 30 years of peace to weaken the bad impression that it had left, and to bring minds back toward a disembarkation.

SECOND ATTEMPT TO INVADE ENGLAND (1744).—England had been at war with Spain since 1739. The vexations of every kind to which the English had subjected our maritime commerce made it plain that France, in spite of her efforts, would not long be able to avoid taking a part in the struggle. A final affront made the government emerge from its attitude of reserve which, if prolonged, would have wrought injury to the national prestige. The Spanish fleet, pursued by the English, had sought refuge at Toulon; and the English ships treated our coast as enemy country under pretext of watching the Spanish squadron.

Fitting out was immediately begun at Brest and Toulon, and it was resolved to throw an army corps into England, taking advantage of the fact that the war with Spain had withdrawn a great part of the English ships from their own coast.

While transports were being quietly dispatched to Dunkirk, Calais, and Boulogne, 15,000 old soldiers were concentrated at Lille and Valenciennes. The Pretender, Charles Edward, was to accompany the troops, which were put under the command of Marshal de Saxe.

It was a small number for the conquest of England—15,000 men; but at this time George II was waging war in Germany, whither he had sent his best troops, and there were remaining in

[1] "Annihilé."—Trans.

England not more than 10,000 men. The discontent that was readily taken for a desire for the restoration was also counted upon, and it was believed that the landing of the Pretender would be sufficient to make the country rise. It was a constant mistake of the Versailles cabinet to speculate upon a revolution in England. The exiled princes, living in retirement, were surrounded by a court of refugees who passed their time in commenting upon and in exaggerating events; and, in their haste to return to a state of affairs that should restore them to place and dignity, they took their wishes for realities. On the other hand, the emissaries kept in England by the court to keep it informed of opinion exaggerated the slightest incidents in order to justify the subsidies they received; and these different causes brought it about that the situation was viewed in a false light in France. As a result it was ever believed that the landing of a number of regiments on British soil would be sufficient to replace the Stuarts upon the throne of their fathers.

The squadron that had been fitted out at Brest comprised then 25 ships under de Roquefeuil as commander-in-chief; its duty was to cover the passage.

Count de Roquefeuil got under way on February 14, 1744. His object was to make a reconnaissance of the English coast, and, after assuring himself that no English fleet was in the Channel, to regain the Straits of Dover and escort the convoy.

Bad weather kept the French squadron off shore and it was not until the end of the month that it appeared off the Isle of Wight. Count de Roquefeuil ascertained that there was no naval force in the roadstead of Saint Helens; from this he concluded, a little prematurely, that the English had not yet fitted their ships out. He detached several ships under command of Baraith to inform Charles Edward and Marshal de Saxe that the passage was clear and that they could cross the strait under the protection of the escort that he had sent them. He himself anchored on the evening of the 22d at Dungeness to cover the passage. The next days his astonishment was extreme to see 34 enemy ships tacking in to reach him.

This is what had happened. Upon his sailing from Brest, Roquefeuil had been sighted first by the *Phoenix*, which was cruising in the vicinity of Ushant; and then, on February 3, by the escort of a convoy coming from Jamaica. The Admiralty, thus

warned, had hastened the fitting out of the fleet; and Admiral Norris quickly found himself at the Downs at the head of 49 sail, of which 21 were of more than 60 guns, and 11 of more than 44.

Thwarted by the tide, the English squadron had to anchor six miles away from our ships. Roquefeuil took advantage of the circumstances to get under way. Favored by the fog, he had already succeeded in escaping from the pursuit of the enemy, when a storm dispersed his squadron and sent it back in disorder to Brest. The same storm prevented the convoy from setting out; the Pretender, Maurice de Saxe and 11 battalions had already embarked.

When the bad weather was over the English forces were guarding the passage; the expedition was abandoned.

The French government had evidently reckoned upon being able to surprise the English because of the war with Spain; but the situation was too tense to permit of the vigilance of our enemies not being fully aroused.

LANDING OF PRINCE CHARLES EDWARD IN SCOTLAND (1745), FOLLOWED BY A THIRD ATTEMPT TO LAND IN ENGLAND.—Charles Edward had not given up the hope of reconquering the crown of his ancestors, and he displayed an energy at this time that would, no doubt, have assured the success of his grandfather 60 years earlier. Left to his own resources he repaired to Nantes, and sailed from there with one ship and one frigate lent him by an Irish privateer.[5] He landed in Scotland June 4, 1745, with a number of followers, some arms and 4000 louis, entered Edinburgh, beat the English at Prestonpans, and penetrated to within 30 leagues of London. The situation became critical for the English; the king was still in Germany and the Council of Regents was at its wit's end. The French government deemed the occasion a favorable one to intervene; 10,000 men were assembled in the vicinity of the Straits of Dover, and the Duke of Richelieu was selected to command. But action had been too slow; when the troops were ready to embark, at the end of December, two English squadrons were watching the Strait. After vainly waiting some time for bad weather to sweep away the English ships, the troops went back to their respective garrisons. The expedition was abandoned.

For a second time (and it will not be the last) we note the im-

[5] These two ships, the *Dentelle* and the *Elizabeth*, belonged to the king and had been lent to the Irishman to use in privateering.

possibility of making an expedition wait that has required lengthy preparations. When all is ready it is necessary to set out or give up the operation. But, as the coast is generally watched and as a storm alone can clear it, the departure depends upon a combination of circumstances that rarely comes to pass.

FIRST CONQUEST OF MINORCA (1756).—As always happens after a fruitless attempt, the war ended without further thought of invading English territory; but the idea was to be taken up on a grander scale during the Seven Years' War.

The war was declared May 15, 1756; as a matter of fact it had been going on for several years. In Canada there had been fighting ever since the death of a French officer, Jumonville, assassinated by the English in contempt of the law of nations. Pitt had caused to be seized in the ports 300 French merchant ships; and, while Parliament had declared the captures irregular, the English government none the less refused to give them up. To all these annoyances it was desired to make an energetic reply, and while Lieutenant-General Macnemara sailed from Brest for Canada with a squadron, an expedition was fitted out at Toulon with the object of seizing the island of Minorca, which had been left in the hands of the British by the Treaty of Utrecht. That power was only keeping at the time two ships and three frigates in the Mediterranean, stationed usually at Mahon.

Lieutenant-General de la Galissonnière sailed from Toulon April 9, 1756, with 12 ships, 4 frigates and 6 gunboats. He first went to Hyères Roads where he joined the convoy of 14,000 men under the command of Duke de Richelieu. On the 18th the fleet anchored before the little town of Ciudadella, where the landing took place with no attempt at opposition on the part of the enemy; by the 24th the artillery and all the material was on shore. The ships of war then went to sea to establish the blockade of the island, the French already being masters of the whole territory except Fort St. Philip, which commands the city of Mahon and in which the English garrison of 3000 men had taken refuge.

In the meantime England had taken alarm at the preparations going on at Toulon, and though their object was concealed it seemed probable that the expedition was aimed at Minorca. The admiralty immediately prepared a squadron for the Mediterranean.

Admiral Bing left Spithead April 6 (three days before the departure of the Frnech fleet from Toulon) with 11 ships and 4000

troops. Upon arriving at Gibraltar May 2, he learned of the landing of the French from the English ships that had fled from Mahon at our approach. He left May 8, having then 13 ships, and arrived in sight of Minorca and of the French squadron on the 19th. Defeated by la Galissonnière the following day, Admiral Bing abandoned the relief of Minorca and sailed away for Gibraltar. Nevertheless he had not lost a single ship; for there, as at Bantry, the anxiety of the French not to abandon the expeditionary corps forbade them to fight to a finish. This timidity might have cost us dearly if contentions had not arisen in the English squadron to paralyze its movements; as a matter of fact, Bing found at Gibraltar on June 19 five ships that had just arrived from England to reinforce him, and with which he might have taken the offensive again.

Fort St. Philip capitulated June 30. The troops then began to embark, and, on July 8, the fleet set out for Toulon where it arrived the 16th, only a garrison remaining at Minorca.

As is known, Bing was relieved of his command, brought to trial before a court-martial, and was shot on the poop of his own ship.

War had been declared three days before the battle of Mahon.

It is curious to note that the English, who were constantly masters of the sea, made no attempt to retake Minorca throughout the entire course of the war. To our mind, the English government held, in this particular, the just estimate of the situation. The means were certainly not lacking to our enemy of landing in security at the Balearics a body of troops capable of wresting the island from the garrison in occupation; but, during the whole of the operation, which might have lasted several months if the French had sustained the siege in Fort St. Philip, the Balearics would have become the center of attraction for the navies of the two countries. The English ships, however, would not have found a favorable field of operations on those coasts; at that time, as we have already said, Gibraltar did not yet constitute a solid point of support, and England was more concerned then to keep the Rock than to utilize it. As a result an expedition against Minorca could have no other bases than the home ports, which were far away, while France had in the neighborhood one of her principal arsenals. A position so advantageous offered to the remnants of our navy that had taken refuge at Toulon such opportunities of thwart-

ing all attempts against Mahon that England preferred not to risk them. Her government doubtless thought that being victorious in the end would suffice to constrain the vanquished to give up what he had taken, and that is the very thing that happened; at the conclusion of peace Minorca was exchanged for Belle-Isle.

FOURTH ATTEMPT TO LAND IN ENGLAND (1759).—The battle of Mahon marked the end of our successes during this calamitous war. The navy had fallen into unworthy hands which set themselves to destroy it with as much ardor as, and more hatred than, the enemy. The ships remaining to us were laid up, their crews disbanded. Finding no enemy to fight, the English squadrons ravaged our coasts and took possession of our colonies; and it seemed as if the navy of Colbert was about to perish, suffocated by shame, when affairs fell into the hands of the Duke de Choiseul. His patriotism could not put up with such humiliations; but, in his desire to raise the prestige of France by a bold stroke, he only cast her into the depths, for there were no longer at disposal means sufficient for his purpose. As ever, our inability to wage war on the sea led us to shift the war to the land, and it was thus that attention was centered on a scheme of invasion. Choiseul, at the instigation of Marshal Belle-Isle, proposed at first to throw 50,000 men on to English soil by sending them over from Boulogne and Ambleteuse in flatboats. A beginning was even made on this plan; the construction of a flotilla was begun and the coast was armed with some hundred heavy guns designed to protect the points of assemblage. But this project was soon abandoned and a new one was adopted, due, it is said, to Captain Bigot de Morogues.*

The descent was to be made at two different places; to this end two armies of 20,000 men each were assembled, the first in Brittany under the Duke d'Aiguillon, the second in Flanders under Chevert. At the same time a general concentration of all squadrons at Brest was to unite 35 or 40 ships. This fleet was first to join the convoy from Morbihan (Brittany), and, passing to the westward of Ireland, was to detach several frigates with the transports before the Gulf of the Clyde; then it was to turn the northern end of Scotland and pick up Chevert's army at Ostend and escort it to the English coast, where it was to land at Breathwater, some leagues from London. This very complicated plan

*Author of a treatise on naval tactics.

had the peculiarity of taking no more account of the enemy than if it had concerned a simple ocean promenade. The participation of the English squadron was, however, acknowledged by providing that, in case it should show signs of interfering, the war fleet would remain in the Channel to paralyze its movements, while the two convoys should cross the sea under escort of a few frigates. To complete these dispositions a small division was to be sent out from Havre to throw a landing force into Ireland with the object of creating a diversion.

If the division of the expedition into three parts, composed of the two landing corps on the wings and of the escort in the center, had only for its object to force the enemy to divide his forces in such a way that the Brest squadron would find before it a number of ships small enough to be fought successfully—if such was the object of this peculiar distribution of force—it might be justified as a preliminary operation. But if it was expected that the passage could be made without fighting, the question arises: What object was there in concentrating the troops in a port at a distance from that in which the ships were to concentrate? This added one difficulty more to those already presented by such a hazardous operation.

The first act of this whole scheme was to get the Toulon squadron out of the Mediterranean and into the ocean. De la Clue, its chief, was watched by Boswcawen off Toulon. The latter, having occasion to repair three of his ships that had been badly damaged in a hot skirmish in the outer roadstead of Toulon, returned to Gilbraltar leaving some frigates before the port. The French admiral profited by his absence to sail, on August 5, 1759, with 12 ships and three frigates; on the evening of August 17 he was at the entrance of the Strait. The same date the English squadron, consisting of 16 ships and nine frigates, got under way at 10 o'clock at night, and on the morning of the 18th Bowscawen sighted the enemy, who had passed through the Strait, and immediately started in pursuit. De la Clue, finding himself discovered, decided to go on past Cadiz, which port he had intended to enter; but, sailing without lights in order not to betray his whereabouts, he became separated from five ships and three frigates, which pursued their course to Cadiz and anchored there in ignorance of his new dispositions. The remainder of the squadron was overtaken by the English squadron the next day, and had to abandon the *Centaure*. The following night two ships steered a false

course and thereby succeeded in reaching Rochefort; the others were destroyed in the roadstead of Lagos.

There is a temptation to throw all the responsibility upon the actors of the drama when passing these painful events in review. Why did not the admiral signal a new rendezvous to his squadron when he decided not to put into Cadiz? Why did the rear guard lose track of the ships in the van? Upon reflection it must be recognized that the cause of all the evil lay in the very conditions under which this unfortunate squadron labored. For a naval force there is no more ungrateful situation than the one that puts it under the necessity of avoiding, at all hazards, coming into contact with the enemy. The least incident destroys all calculations, forces sudden and unexpected modifications of orders, and puts the ships under sailing conditions that are abnormal. Why, then, be astonished that mistakes result that do not occur at ordinary times? The disaster resulting from this separation is not to be imputed to de la Clue but to the false position in which circumstances had placed him. On the other hand it is difficult to explain what he was going to do at Cadiz, in the immediate vicinity of a superior force. If the French had had the good fortune to pass through the Strait without being discovered, which was not impossible since they went through the Strait at night, the stop at Cadiz would have revealed their passage and have made them lose the benefit of their lead.

The number of ships at our disposition in European waters was reduced to 21 by the disaster at Lagos, and the plan of the campaign was modified. Five ships, detached from the Brest squadron, were to escort the convoy from Brittany, while the 16 others should occupy the attention of the English forces. But, at the last moment, Marshal de Conflans, who commanded the squadron, insisted that his force should not be divided, and it was decided that he himself should go to Morbihan for the convoy.

The English, who were attentively following all the preparations for the expedition, had 25 ships before Ushant under Admiral Hawke, while Commodore Duff cruised in the vicinity of Belle-Isle with four ships and three frigates in order to watch the movements of the transports. The season became well advanced with the squadron still at Brest. Finally, at the end of October, a storm forced the English squadron to retire upon Torbay and left the approaches to Brest free. Marshal de Conflans sailed at 11 o'clock on the morning of November 14 and set his course for Belle-Isle.

Why had he waited so long? It is impossible that the storm could have lasted 15 days. At all events, Admiral Hawke left Torbay the same day, and learning from his scouts of the sortie of the French, he sought them at Morbihan without hesitation. On the 20th he made junction with Commodore Duff, and he came upon the French squadron at the moment when it was entering the passes of Quiberon Bay. The result of that unfortunate battle is well known. The expedition was abandoned.

EXPEDITION OF THUROT TO IRELAND (1760).—Meanwhile Captain Thurot, who was charged with the diversion in Ireland, had set out from Dunkirk on October 6 with a flotilla of six privateers carrying 1400 troops.[7] Happily escaping the English cruisers that were watching the northern expeditionary corps, he appeared off Aberdeen and threw Scotland into a state of alarm. Overtaken by tempestuous weather he lost two ships and laid by for several months in Norway and the Fairoë Islands. Finally it was not until February 21, 1760, that he landed at Carrickfergus. He had no trouble in seizing the castle, which had a garrison of only 200 men. But having learned that the expedition had been given up in consequence of the battle of Quiberon, he judged that he would not be able to do anything solely on his own resources; and, three days after his arrival, he set out again for France. Moreover, discord reigned in the little squadron between the land and the sea officers, and between Thurot and his captains. Shortly after sailing two ships separated; the other three were pursued and attacked by English frigates, and were captured near the Isle of Man.

After the failure of this attempt at invasion, France had to confess herself beaten.

FIFTH ATTEMPT TO LAND IN ENGLAND (1779).—When France ranged herself on the side of the English colonies in America that had revolted against their mother country, the circumstances were particularly favorable for attempting a descent upon England. The war, which had been going on several years on land in America, absorbed all the regular troops of the United Kingdom, while on the sea our alliance with Spain gave us a considerable superiority. Preparations were therefore made for an invasion on the following bases:[8]

[7] He had left Havre the moment that city was bombarded.

[8] We pass by in silence an abortive attempt against the Norman Islands undertaken with insufficient means.

The two allied navies, after effecting junction, were to crush the English forces in the Channel and then conduct across a convoy of 40,000 men.

We shall see how an operation appearing to present the greatest chances of success may come to naught by the one fact of faulty preparation.

Lieutenant-General d'Orvilliers left Brest on June 3, 1779, with 30 ships and 10 frigates, and sailed for the Spanish coast. But the Spanish ships were not ready; for a month d'Orvilliers cruised in the vicinity of Cizarga waiting for them. On July 2 eight ships and two frigates came out from Corunna under command of Lieutenant-General Don Antonio Darce and joined the French fleet. It was not until 20 days later that Lieutenant-General Don Luis de Cordova arrived from Cadiz with the rest of the Spanish fleet—28 ships, 2 frigates, 2 corvettes and 8 fireships.

Some days passed, during which the two almirals were occupied with the organization of the fleet. One important question, that of signals, had been entirely neglected during the negotiations concerning the assembling of the two squadrons. "I was greatly surprised, my Lord," wrote Lieutenant-General d'Orvilliers to the Minister, "to find that the signals for the fleet had not been printed in Spain, and that M. Mazzaredo (chief of staff of the Spanish fleet) had been obliged to copy them by hand after his departure from Cadiz. I can assure you that it has never before happened that two fleets, making junction at sea, have been reduced to the improvisation of an entire code of signals . . . ." On the 28th and 29th the ships that had been detached to Ferrol and Corunna rejoined the flag of the commander-in-chief. On July 30 the combined fleet, in strength 66 ships of the line, of which 36 were Spanish, and 14 frigates of the two nations, stood away to the North.[9]

More than two months had passed and the ships had already consumed a large part of their stores; but d'Orvilliers counted upon transports loaded with provisions being sent to him by the Minister, who knew the situation of the fleet. The fleet was encumbered with sick, many ships had sailed without doctors, and medicines were wanting.

On August 7 the combined fleet sighted Ushant. D'Orvilliers

[9] Chevalier. *Histoire de la marine française pendant la guerre de l'Indépendence américaine.*

found there neither provisions nor the pilots for whom he had asked, but in spite of this he entered the Channel. On August 16 he received orders that modified the plans of the government; the landing, instead of taking place in the neighborhood of Portsmouth, was to be made at Falmouth. The moment was poorly chosen to change all the plans. The Minister took no account of the objections that his instructions gave rise to: Falmouth had an anchorage insufficient to hold the fleet and it did not offer secure shelter. D'Orvilliers attempted to point this out, but it was too late to discuss the matter. An easterly gale blew the fleet out of the Channel and solved the question. As soon as the weather moderated the provisions were equally divided between the ships, and the subsistence of the fleet was thus assured until September 20.

On August 25 the English fleet was signalled. It comprised 35 ships and was sighted near the Scilly Isles, having also been driven to leeward by the easterly winds. A real admiral *(véritable homme de guerre)* would have lost no time in undertaking its pursuit at once; d'Orvilliers preferred to call a council of war, and it is easy to imagine how long a time was needed to gather on board the admiral's ship the flag officers from a fleet of 80 sail. The council decided that the fleet should abandon its cruise on September 8 at the latest, in view of the sanitary conditions and of the shortness of provisions; and that, in the meantime, it should go to meet the enemy. But the enemy had not delayed for the end of the deliberations to make his escape; on September 2 he entered Portsmouth. The combined fleet continued to cruise for several days, then steered for Ushant, and anchored at Brest on September 14.

The expedition was abandoned.

This unfortunate cruise brought no honor to the allied governments, when consideration is given to the want of co-ordination shown in fitting out the squadrons, the failure to establish any understanding for sailing in company, the deficiencies in water and provisions, the lack of surgeons and medicines, the defective hygiene, and the unconcern manifested about victualling the fleet when it had put to sea. Not by showing such incapacity as this can it be hoped to give a fatal blow to an enemy who is determined to defend himself. The expedition was thus doomed to failure at the outset. D'Orvilliers fell under the ban of disfavor; but the Minister of Marine, M. de Sartines, deserved to have followed him into retirement, for he was the true culprit.

Though the war was to go on for several years, during which our superiority in the Channel became only the more marked, yet the idea of conquering England was completely given up.

It is a curious fact that, up to the time of the Empire, our schemes for descent were prepared with the least energy when our navy was the strongest. From this it may be concluded that the passage of an army offered such hazards that it was preferable to keep to measures exclusively maritime so long as the hope remained of being victorious on the sea; and that the army was only permitted to take a part when there were no other means to employ. But if there is hesitation about entrusting the destinies of troops to the hazard of a crossing when it is possible to conquer the command of the sea beforehand, then it must be admitted that disaster is inevitably courted if the same operation is ventured across a sea occupied by the enemy.

SECOND CONQUEST OF MINORCA (1781-1782).—The manifold necessities that pressed upon the English navy had forced the Admiralty to strip the Mediterranean almost completely, and the allies found the occasion a propitious one for retaking Minorca. On June 23, 1781, Guichen took to Cadiz from Brest 18 ships which were placed under the orders of Don Luis de Cordova. They were joined there by a ship and a frigate from Toulon, and the combined fleet, 50 ships strong and carrying a landing force of 14,000 men, weighed from Cadiz on July 22. The fleet landed the troops at Minorca and then left the Mediterranean for the North. The Duc de Crillon, who commanded the expeditionary corps, easily took possession of the island, but the citadel did not surrender until February 4, 1782.

THE EXPEDITION OF HOCHE TO IRELAND (1796-1797).—We now come to the wars of the Revolution, during which the spirit of enterprise characterizing this epoch led inevitably to ideas of invasion. There was no preoccupation then about the means; it was willingly believed that hardihood of conception and enthusiasm in execution would make up for everything.

The leaven was ever at work in Ireland. A widespread association had been formed in the island to shake off the yoke of the English, and upon the outbreak of war a delegation of the principal leaders had come to Paris to implore the aid of France. The difficulties of every kind in the midst of which our country was then struggling had prevented the Convention from acceding

to this request; but in 1796, new emissaries having come to give assurances that the appearance of the French would occasion a general uprising in Ireland, the Directory believed the moment favorable for action.

Hoche was appointed to the command of the expedition; Villaret-Joyeuse, who was at the head of the Brest squadron, was to command the naval forces and remain under the orders of the General.

The troops that had been engaged in the pacification of the *Vendée* were sent to Brest, and orders were given at that port to fit out all ships that were sea-worthy. Our naval material was at that time in a deplorable state; storehouses were empty, and for many years the ships had not been kept in condition. The personnel left quite as much to be desired; the attempt to get together the number of seamen necessary to form the crews of the ships had not succeeded, and those who were present had no professional instruction.

The danger of undertaking an expedition under such faulty conditions did not escape the attention of the officers; Villaret-Joyeuse particularly did not cease to represent to Minister Truguet the rashness of such an expedition. At the same time the lack of funds impeded the fitting out of the ships. Hoche went to Brest to hasten the preparations; he found that nothing was going on in a way to accord with his own impatience, and he openly accused the admiral of being ill-affected. The Directory ended by displacing Villaret, and Morard de Galle was named in his stead.

Surely Villaret should not be reproached for having lifted the voice of reason and for having advised against an enterprise in which his own honor was engaged as well as that of France; but, granted that the government had decided upon the crossing, it was good policy not to leave Villaret to have a part in an operation of which he disapproved. Unfortunately, Morard de Galle was no more confident. He did not accept the command given him without a protest; but this done he lent to Hoche the most devoted assistance.

Thanks to the efforts of Hoche, and to the activity of Bruix, who was chief of staff of the squadron, the expedition was ready to set out in the early days of December.

The original plan of Truguet consisted in concentrating at

Brest all the French and Spanish naval forces; but, as the necessity existed of dispatching reinforcements to India, he thought of having the squadron leave Brest with only a part of the expeditionary corps, and of dispatching eight ships to India after the landing of the troops. As it was difficult to foresee at what time it would be possible to send reinforcements, this advance guard would be exposed to the danger of succumbing before aid could arrive. Therefore a more simple idea was reverted to, which, as the season was advancing, was satisfied by sending to Brest the division of Rear-Admiral Richery,[19] which had come from Newfoundland and anchored in Aix roadstead November 5.

On December 15 the squadron weighed from Brest; it was composed of 17 ships, 14 frigates, 6 corvettes, 6 storeships and 20 transports. It carried 17,210 infantry, 1100 cavalry and 1200 artillerymen. Hoche and Morard de Galle were on board the frigate *Fraternité*. The squadron of Admiral Colpoys had been driven off by a violent easterly wind.

On the evening of the 15th the fleet anchored in Bertheaume Bay to await two ships that were behindhand; it finally sailed on the afternoon of the 16th, steering for Sein Race. At 5 o'clock, owing to the wind, the admiral made signal to go through the Iroise Channel; but the signal was poorly understood because the ships were unaccustomed to sailing in squadron and the crews were improvised. To add to the confusion, an English ship cruising in the Iroise, the *Indéfatigable*, ran near the French ships, firing rockets and guns and burning signals. In short, the greater part of the fleet passed through Sein Race, while the other ships kept on with the admiral, and the *Séduisant* was lost on Grand-Trévennec.

On the morning of the 17th eight ships, seven frigates, and one transport were together; they placed themselves under the orders of Rear-Admiral Bouvet, whose flag flew on the *Immortalité*. The Admiral then opened his instructions which directed him in case of separation to proceed to Cape Mizzen Head and cruise there for five days. On the 19th the division was joined by rear-admirals Richery and Nielly with seven ships, two frigates, and a number of transports. Only one ship, three frigates, two corvettes and one transport were missing; unfortunately the two chiefs of the expedition were on board one of the missing frigates.

[19] Only two ships of this division were able to take part in the expedition.

On the 21st the fleet was at the entrance to Bantry Bay in bad weather with snow falling. Rear-Admiral Bouvet, mistrusting the inexperience of his crews, feared to remain underway; he anchored near Bear Island, allowing each ship to act at discretion. In his vicinity seven ships, six frigates, and one transport anchored; the rest lay to, and the fleet was once more divided.

On the 24th the wind fell. A council of war was called on board the *Immortalité* under the presidency of General Grouchy, in which it was decided to land the 6000 troops available. The ships got underway to get nearer the land; but the weather became so bad on the 25th that many ships had to go to sea to avoid being cast ashore, and among them the *Immortalité*.

During the afternoon of the 26th the wind began to go down. On the morning of the 27th, Division-Commander Bedout, to whom the command descended by reason of the absence of Admiral Bouvet, called a council of war on board the *Indomptable*. The matter of landing was debated, but it was decided to be impossible, the 4000 men remaining having neither artillery, munitions, provisions, nor money. The division sailed on its return to France and anchored at Brest on January 12 without having seen the enemy. Several ships that had been separated from the others on the 21st and 25th were already there. They were the *Pluton*, the *Pégase*, the *Résolue*, and the *Immortalité*, the last named carrying the flag of Admiral Bouvet.

The *Tourville* and the *Fougueux*, which had been unable to anchor under Great Bear Island, had remained at sea laid to; the former arrived at Bantry Bay, December 30, and the latter December 31. The *Redoubtable*, which had left the anchorage on the night of December 22, also arrived on the 30th. On January 1 the *Nestor* arrived; she had been in company with the *Fraternité* until December 20, but had lost her on the night of December 20-21 during a squall. Again the question of a landing came up. About 4000 men could be put ashore; but there was a rumor that the English had got 13,000 men together in camp since the appearance of the French; it was known further that a part of the expeditionary corps had sailed for Brest; finally the ships began to feel the need of provisions, and they could not delay their return much longer. It appeared imprudent to abandon a handful of men to their own resources under the circumstances, and the idea of landing was abandoned. The ships sailed for Brest on the 5th of

January and arrived on the 13th, with the exception of the *Surveillante* which was in such bad condition that it had been necessary to sink her in Bantry Bay.

The *Trajan* and the *Charente*, after having gone to the mouth of the Shannon (one of the assigned rendezvous), anchored on December 28 in Kilkadia Bay, where the *Trajan* furnished some provisions to the *Charante*, which was short; after which both ships returned to Brest.

What, then, had become of the *Fraternité*, which carried the two chiefs of the expedition? On December 21, this frigate found herself alone after having had in company for some time the *Cocarde*, the *Romaine*, and the *Nestor*. On the 24th she was chased by an enemy's ship and only escaped by jettisoning a part of her artillery. Going on then toward the Irish coast she met at sea the *Révolution* and the *Scevola*. The latter was in a sinking state and the *Révolution* took off her crew and passengers. From these ships the Admiral had news of the expeditionary corps up to December 22. He then decided, the General agreeing, to return to France with the *Révolution*, whose condition might become critical at any moment. The two ships anchored at Aix Island on January 13; already for several days the men had been on reduced rations.

Such was the end of this unfortunate expedition. Of the forty-five vessels comprising it, twelve were lost. The *Séduisant* had gone ashore on Grand-Trévennec upon leaving Brest; the *Scevola* had foundered at sea; the *Surveillante* had sunk in Bantry Bay; the *Impatiente* had gone upon the rocks near Cape Clear; the *Tortue*, the *Atalante* and four transports had been captured by the enemy; finally the *Les-Droits-de-l'Homme*, chased by two vessels of the enemy, had been lost in Audierne Bay, carrying with her to destruction the English frigate *Amazone*.

At first sight it seems as if the enemy had had only a secondary part in the defeat of this attempt. The striking thing about it is the deplorable state of the ships, which were unable to stand the slightest wind; and the insufficiency of provisions, which weighed upon every decision. But, though hasty and insufficient preparation inevitably tended to failure, it is no less true that the necessity under which our ships labored of being unable to face the presence of the enemy had consequences even more serious. That it was that caused the modification of orders and provoked the initial

separation of the expeditionary corps; that prevented the vessels arriving successively at Bantry from awaiting the laggards; that forced a multiplication of rendezvous and that misled ships in a false direction.

None the less the English squadrons were unequal to their task. How was it that the French could successively present themselves on the Irish coast without drawing the English squadrons thither? Here is something that appears beyond belief, and is so in fact. The expedition had to fear the squadron of Colpoys, which was cruising off Ushant, and that of Bridport, called the Channel Squadron, which was anchored at Spithead. Colpoys, as soon as he knew that the French had come out, went at once in search, and ran across the division of Rear-Admiral Villeneuve, which was on its way from Toulon to Brest. This diversion led him off as far as Groix Island, where he abandoned the chase, returning afterwards to Plymouth. As for the Channel Squadron, though advised on the 20th of December it did not sail until the 8th of January, and one is quite at loss to find the reasons that condemned it to inactivity. Nothing less than these two unlooked-for circumstances could have served to keep the expedition from total destruction.

PREPARATION FOR A LANDING IN ENGLAND (1797).—Hoche had returned furious, but with unabated enthusiasm. Attributing to the elements and to disaffection what was only the consequence of an error in principle and of the disorganization of the navy, he pressed the Directory to make ready a new expedition. After the signature of the Léoben preliminaries, the government apparently entered into his views, but with a desire this time to get together a force ample to try conclusions with the English. To this end the order was given to fit out all the available ships at Lorient and Rochefort and send them to join the Brest squadron, which was ready. At the same time the cooperation of Spain and Holland was obtained. The former was to send its squadron from Cadiz to Brest as soon as it found a chance to get out, and the latter was to attempt a diversion by throwing into England a corps of 13,000 men. This project was not followed up in France; it was the time of the Lille conferences that ended in nothing. Holland alone made a beginning in its execution. From the beginning of July, 1797, 13,500 men were embarked in her fleet, which consisted of fifteen ships, ten frigates, and twenty-seven transports.

For more than two months this expeditionary corps waited for a favorable opportunity to set out; at the end of that time the ships had run out of provisions and the troops had to be landed.

The treaty of Campo-Formio, by establishing peace on the continent, left to France the free use of her army, and she wished to profit thereby by turning it against England, which alone refused to make peace. General Bonaparte took the place of Hoche (who died in September) at the head of the Army of England, and under his impulse the first preparations went rapidly forward.

"Vice-Admiral Pléville Le Peley recalled to the service the sailors who had been discharged with so little reflection some months before. The government took back the frigates, corvettes, and other vessels that it had loaned to commercial uses, paying heavy indemnities therefor. It was necessary to get together new crews, and it was then that the extent of the error committed in disbanding them was realized. The sailors of the maritime inscription hid themselves and only a small number of them were found. The government had no money, and the expedition to England required a great deal. The Conseils voted a loan to meet this expenditure on the proposal of the Directory. The court of Madrid was besought from Paris to assemble at Cadiz as many ships, frigates, and light vessels as possible. This squadron, provided with three months' stores and carrying a landing corps of 15,000 men, was to be ready to go to sea at the end of April."[11] If not blockaded by superior force it was to sail at that time for a destination to be arranged by the two governments in concert. The Directory also asked that the vessels stationed at Ferrol,—ships, frigates, and corvettes,—might be sent to Brest with provisions and stores for three months, and with full crews. The Dutch Republic had pledged itself to take a part in the expedition to England. It gave the Texel fleet, some troops and the transports necessary to embark them. General Andréossi and Engineer Forfait were commissioned to ask from the Dutch government 200 flat boats of good sailing qualities and 200 fishing or other boats able each to carry from 80 to 100 men. They were charged to see, besides, that the gunboats and the launches and other armed boats were fitted out and sent to Dunkirk. It was the intention at Paris to have at Boulogne 50 launches, 400 or 500 fishing boats, 100 horse boats, and 25 vessels of 100 tons. Calais was to shelter 400

[11] 1798.

vessels, and the small ports Etaples and Ambleteuse 50 fishing boats each. General Caffarelli was ordered to put the coast batteries in good condition, and to augment their number should that prove necessary, in order to ensure the security of the ports designated to receive the vessels of the expedition. Engineer officers inspected the coast of England between Folkstone and Rye from the decks of privateers."

"At the beginning of February, 1798, General Bonaparate visited the coasts of the Ocean, the Channel and the North Sea. . . . ."[12]

It was in consequence of this inspection that the commander of the Army of England was convinced that the expedition could not take place during the course of that year, and that he submitted to the Directory the plan for the expedition to Egypt, which was accepted.

THE EXPEDITION TO EGYPT (1798).—The preparations were at once pushed with feverish activity. At Toulon fifteen ships and thirteen frigates were fitted out, and transports were assembled at Marseilles, Ajaccio, Genoa, and Civita Vecchia. Brueys, who had known General Bonaparte in Italy, was made a vice-admiral and put at the head of the fleet.

The Commander-in-Chief arrived at Toulon May 9, 1798; on the 19th the fleet set sail after a delay of several days due to contrary winds. Joined by the transports from Marseilles it steered with the wind aft for Ajaccio, then for Genoa, to pick up the convoys assembled in those ports.

As contrary winds prevented it from going to Civita Vecchia, the convoy from that place did not join until later.[13] On June 10, Bonaparte captured Malta. On July 1 the fleet appeared before Alexandria. Brueys anchored to the westward of the city, facing the Marabout Tower, and the landing began that same evening. The next day the city was captured. The convoy and light vessels profited by entering the port immediately, while the squadron proceeded to Aboukir.

Thus did Bonaparte, guided by his star, succeed in transporting 33,000 men and 800 horses across a sea occupied by the enemy. Was that the end of it all? The outcome will teach us the answer. But first it is interesting to know the train of circum-

[12] Chevalier. *Histoire de la marine française sous la Révolution.*
[13] Before Malta.

stances by which this fleet of four hundred sails had been able to cross undiscovered.

"When the first news reached England of the preparations that we were making at Toulon, the government saw in these measures only a strategem to draw Lord Jervis into the Mediterranean. Should he withdraw, Admiral Mazzaredo[14] would get to sea. Consequently there was no desire in London to deviate from the line of conduct being followed at the moment. The British navy was closely blockading the Spaniards in Cadiz and the Dutch in the Texel. Considerable forces were watching Brest and the Channel coast. The danger of an invasion, the thing regarded with most fear by the English nation, seemed to be provided against by these measures. Nevertheless the reports of English agents in Italy gave such a formidable aspect to the preparations of the French that the British government deemed it necessary to have information of what was going on at Toulon. By direction of the Admirality Lord Jervis sent a detachment of three ships and four frigates into the Mediterranean. This division, commanded by Admiral Nelson, was about 25 leagues south of Hyères Islands on May 19, 1798, when it was struck by a violent gale from the northwest. The *Vanguard,* seventy-four, flagship of the Admiral, lost all her masts. The enemy's ships, flying before the wind, steered for the coast of Sardinia. On nearing land the *Vanguard* narrowly escaped being lost, but Admiral Nelson finally reached the anchorage of St. Pierre Island on May 22. On the 27th the *Vanguard* had rigged jury masts and repaired her worst injuries, and Admiral Nelson again went to sea. Arriving May 31 off Toulon, he was informed of the departure of the French squadron, but could obtain no information of the route it had taken. On June 5 he was joined by the brig *Mutine* carrying urgent dispatches. The English government, which had not paid any great attention to our preparations up to then, was beginning to get alarmed. They were asking in London if the concentration of troops and ships made at different points of the Mediterranean did not have England as their objective. The Admiralty with considerable effort fitted out new ships and sent them to Lord Jervis, who received at the same time an order to raise to fourteen ships the squadron detached into the Mediterranean. .... Lord Jervis, in the instructions that he sent to Nelson by the

[14] Who was blockaded at Cadiz.

Mutine, seemed to think that we might wish to attack Naples or Sicily. Perhaps, he added, we might have in mind directing upon some point of the Spanish coast an army with which we could march against Portugal. Finally, examining a last hypothesis that was of especial interest to England, Lord St. Vincent asked himself if our real object were not to pass the Strait of Gibraltar and throw troops into Ireland. . . .

"On June 7 Admiral Nelson effected his junction with the eleven ships that Admiral Jervis had sent him, ten seventy-fours and one fifty." [15]

It was then that the exasperating pursuit began whose end was at Aboukir. The English squadron doubled Cape Corso June 12; it was at Naples June 19, where Nelson learned that the French fleet had been sighted on the Sardinian coast, the rumor being that it was on its way to Malta. On the 20th the English squadron passed through the Strait of Messina; on the 22d Nelson learned from a merchantman who had passed through the midst of our fleet that it was then to the eastward of Malta steering southeast.

Convinced that Egypt was our objective, Nelson hastened in that direction. On the 28th of June he was off Alexandria, communicated with the shore and learned that the French had not appeared. Uncertain what to think, he decided to return to Sicily, little suspecting that the next day he would pass within a short distance of our fleet as he worked to windward. The English squadron anchored at Syracuse July 19, for water and provisions. Nelson could no longer doubt the destination of the French expedition and he again set his course for Egypt. On the 1st of August the *Zealous,* which was scouting ahead of the fleet, signalled that ships were at anchor to the eastward of Alexandria. That night our squadron was annihilated.

Two questions now arise:

Why is it that the Egyptian expedition, alone of all those made with important bodies of troops, was able without hindrance to cross a sea occupied by the enemy?

Should we consider that the object of the expedition was attained by the fact that the troops took possession of Egypt?

When Brueys left Toulon the Mediterranean had been, since December, 1796, abandoned by the English ships, which were

[15] Chevalier. *Histoire de la marine française sous la Révolution.*

drawn into the Ocean by the preparations for a descent upon England; neither the Admiral nor the General suspected the arrival of Nelson in the vicinity of Toulon at the very moment of their setting out. The several movements necessary to pick up the convoys were thus made by the fleet in perfect ease of mind,—without the haste that breeds disorder. The convoy sailed by easy stages and was able to remain concentrated, thanks to this lack of haste. To be sure this was not the determining cause of the success of the passage, but paradoxical as it may appear it was one of its elements, because with the conviction that the sea was free, there was no necesity of making the sort of decision so often attended by grievous results.[16]

The thing that did favor the French, even more than the damage to the *Vanguard,* was the place chosen for the landing. So improbable was it that neither the English Admiralty, nor Jervis, nor Nelson suspected it at first. We were not at war with Turkey and it was not apparent that the occupation of Egypt would have great weight upon the issue of the war. Attention had not been called in this direction; consequently, the fleet having had the good luck to get away without being followed up, the search made in quest of it was bound to go amiss, and the fleet had against it only the chance of an accidental meeting at sea.[17]

None of the expeditions of which we have spoken hitherto found themselves under like conditions. Some were able, thanks to a gale of wind, to leave port without being observed; but the enemy always knew on what coasts to find them again. And of this expedition it is likewise to be noted that the very reason that contributed to the success of the passage took away its efficacy from the enterprise, since the possession of Egypt by France did not imperil the fate of England.

As for the second question that has been raised, it may be said that, if it had been possible to sign a treaty of peace with England at Cairo, the success would have been complete, and the destruction of Bruey's squadron would have been only of secondary importance. But, since the expedition to Egypt was only a diversion, the

[16] Brueys was not informed of the presence of the English in the Mediterranean until the second part of the passage, by an express dispatched from Toulon.

[17] This meeting just missed taking place on June 22, near Cape Passaro; the English squadron sighted and had in plain view two sails that were afterwards known to have been a part of the French fleet.

importance of which, moreover, is not evident, since the naval war went on, we must put on the balance sheet of this undertaking the influence of the loss of our squadron upon maritime operations, the capture of vessels that attempted afterwards to establish communications with Egypt,[18] and the fruitless attempts to revictual the expeditionary corps, like that of *Ganteaume*. The army, cut off from the sea and abandoned to its own resources, grew weaker and weaker and finally was forced to capitulate. The genius of Napoleon was able to put off the inevitable day of reckoning; but that day was bound to come sooner or later, and come it did. From every point of view the expedition to Egypt had consequences that were calamitous; and if this is not apparent at first sight, it is because our attention is diverted by the brilliancy of Bonaparte's victories that have left behind them so luminous a wake. As for the pasage itself, its success can not make us forget the dangers to which the army commanded by our greatest captain was exposed, nor reconcile us to such a hazardous operation.

EXPEDITION OF GENERAL HUMBERT TO IRELAND (1798).—The great invasion of England had been postponed; events on the continent were soon to cause the Directory to abandon it. The Directory then reverted to the idea of stirring up Ireland to revolt by grouping the inhabitants about some thousands of French soldiers.

The advance guard of this small expedition left Aix[19] August 6, 1798; it comprised 1200 men under the command of General

[18] The expedition to Egypt caused the loss of the following vessels of war:

Brueys' squadron: *Orient, Franklin, Tonnant, Aquilon, Spartiate, Conquérant, Peuple-Souverain, Guerrier, Heureux, Mercure, Timoléon, Artémise, Sérieuse.*

After Aboukir: *Généreux, Guillaume-Tell, Sensible, Anémone, Alceste, Junon, Courageux, Alerte, Ville-de-Marseille, Entreprenant, Redoubtable, Capricieuse, Indépendant, Jeune-Alexandrine, Justice, Egyptienne, Régénérée, Causse, Dunois, Montenotte.*

To this long list must be added all the ships that were not taken, and that could not take part in the operations, being devoted exclusively to the ferry between Toulon and Alexandria.

[19] Many historians have it that Savary's division set out from Brest. I have found in the unpublished papers of Admiral Martin, which are kept in the Rochefort Library, the sea journal of Commandant Papin, flag-captain of Division Commander Savary, from which is proved that the division was fitted out at Brest and went to Rochefort to embark the troops.

Humbert. The division formed of the three frigates *Concorde, Franchise,* and *Médée,* was under the orders of Division-Commander Savary. He arrived on the coast of Ireland without having encountered any vessels of the enemy, and on the 21st he landed his troops at Killala, immediately returning to France. He entered the Gironde September 5 with the same good fortune.

At first General Humbert had some successes; then later, when the English had assembled troops, he was overwhelmed by weight of numbers and was forced to surrender on September 8.

On the 7th the brig *Anacréon* left Dunkirk carrying two Irish officers and forty-five men. Delayed by contrary winds, the vessel anchored near Great Aran Island, where news of General Humbert's surrender was received. The Irishmen deemed it useless to land and the brig brought the detachment back to France.

While General Humbert was sailing toward Ireland the Brest Division, carrying the major part of the contingent (3000 men), vainly tried to get away. It was composed of one ship, the *Hoche,* and eight frigates under Division-Commander Bompard. As early as July 21 it entered the Iroise but the appearance of the enemy forced it to go back to port. A second attempt, made August 19, was still less fortunate; the ships came back into the Goulet pursued by the enemy's shot. Finally, on September 16, it was able to get to sea; but from the moment of leaving it was followed by enemy frigates which never left it until October 4. On the 10th it was in contact with Commodore Warren's division composed of three eighty-gun ships and five frigates, and on the 11th it was obliged to accept battle. The *Hoche* and three frigates were captured. The *Immortalité* and *Résolue* succeeded in escaping and anchored on the 18th in the Bay of Donegal, where they learned the fate of Humbert's column. General Menage gave up the landing and the frigates sailed the same evening. During the passage homeward the *Résolue* was taken by the *Melampus,* and the *Immortalité* by the *Fishguard.*

The *Loire* and the *Sémillante* steered for Galway; on the 15th they were chased, and they separated. The *Loire* after several brilliant engagements, surrendered to the ships *Anson* and *Kangaroo;* the *Sémillante,* more lucky, succeeded in escaping and arrived at Lorient October 26.

The *Romaine* anchored on the 13th on the Irish coast several miles away from the *Immortalité* and the *Résolue;* not succeeding in getting information she returned to Brest on the 21st.

The French government, uneasy about the situation of the division of Bompard, decided to send back Division-Commander Savary[20] with fresh troops. He left the Isle of Aix on October 12, with four frigates, and by good fortune reached Killala, where he learned of the disaster that had overtaken Bompard. He sailed at once on his return to France without landing his troops. Chased by two English ships, his vessels scattered. The *Vénus* entered the Charente November 6, and the *Concorde* on the 9th; the *Franchise* anchored off Saint-Martin-de-Ré on the 6th, after throwing her guns overboard; finally the *Médée* reached Basque Roads on the 7th under similar conditions. It is hard to find an operation more badly conceived. Making the doubtful admission that 4000 or 5000 men were sufficient to maintain themselves in Ireland, the best way to drive them to surrender was certainly to send them out in small parties. It was actually too presumptuous by far to suppose that General Humbert would be able to maintain himself in that country with a thousand men; and, as the landing place of reinforcements could not be indicated in advance because of the presence of enemy forces along the coasts, the reinforcements risked being separated from the advance guard. Further the greatest difficulty was to land them; and circumstances so favorable as those encountered by the Savary division are not met more than once.

PREPARATIONS FOR AN INVASION OF ENGLAND: THE BOULOGNE CAMP.—To end this history there remains only the mention of Napoleon's preparations to invade England.

From the rupture of the peace of Amiens the First Consul had dwelt upon this idea, and he gave to his plan proportions as vast as his genius. At Boulogne he formed a camp of 150,000 men, 10,000 horses, and 400 guns. Here is something far removed from the timidity of the Monarchy; this time it is to be a duel to the death, and if this great army succeeds in setting foot on English soil, England's day has come. But in order to carry over such a mass of troops means of transport were required, and the First Consul busied himself without loss of time to create them.

Three kinds of vessels were built:

1st. Armed launches carrying four pieces of large caliber. They

[20] This second expedition was little to the liking of Commander Savary; he wrote several letters asking to be relieved from the doubtful honor of passing a second time across the English cruising ground.

were brig-rigged, had a crew of 24 men, and could carry a company of infantry of 100 men with their munitions.

2d. Armed boats especially intended to carry artillery. Forward they had a 24-pounder, and aft a field piece; amidships there were stalls for two horses. These boats had crews of only six men and could carry a company of infantry and several artillerymen.

3d. Pinnaces of about 20 meters length, provided with sixty oars to be manned by soldiers; they carried only a small howitzer and a 4-pounder.

Thus fitted out the army could land in spite of opposition, thanks to the guns of the launches, and immediately afterwards give battle; but in order to carry on the campaign there would be need of its cavalry and its trains. To this end a commission bought all the coasters and fishing boats along the coast from St. Malo to the Texel.

When, after three years' efforts, the Emperor had succeeded in realizing the prodigious task of assembling two thousand three hundred vessels, the only thing remaining was to ensure the liberty of the sea to his immense flotilla. In a later chapter we shall see the different combinations that the Emperor had designed to sweep the strait, and the causes that made them come to naught.

This attempt at invasion, the grandest of all in its conception, was also the last.

If we desire to draw conclusions from this array of facts, whose results are often contradictory, it is necessary at the outset to distinguish between important expeditions, requiring the assemblage of a great number of vessels, and those which only involve the transportation of a few thousand men.

CONDITIONS NECESSARY FOR THE TRANSPORTATION OVER SEA OF AN ARMY CORPS.—In the former case recourse is necesary to packets and merchant ships, and consequently an encounter with the enemy, however feeble he may be, becomes fatal to the expedition. All these auxiliary ships are unprovided with the necessary means for sailing in squadron. They are officered by men who are strangers to maneuvers and to signals. In the old days, also, the convoy was nothing but a mob following pell-mell after its escort. Now the transports are placed in one or two columns, with ships of war introduced among them charged with the duty of guiding them. Naturally the speed is low because,

when great numbers of troops are to be transported, it is necessary to utilize the last reserves of commercial ports.

If the enemy runs across this procession, which covers a great extent of sea, the situation at once becomes critical. At the first shells that fall about them the transports, destitute of every means of protection, have no resource save flight. Threatened by the danger of sinking and without succor, crews and passengers become demoralized; disorder ensues and soon the convoy is dispersed in every direction. What can the escort do? It seeks to concentrate and interpose between the enemy and the convoy; but in can neither keep the shells from reaching the convoy nor keep the light vessels from rushing in pursuit of it. Moreover the ships of war are themselves encumbered with troops in order to keep down the number of auxiliaries, and they find themselves in the most unfavorable condition for battle. In every way the expediton becomes broken up. So true is this that the instructions given to our squadron commanders under circumstances of this kind prescribed that they should always carefully avoid the enemy; and when they have had the bad fortune to be met at sea the result has always been lamentable. The Spaniards are perhaps the only ones who have essayed (in the sixteenth century) to form an assemblage of ships formidable enough to force the passage of a convoy in the face of the enemy, and the world knows what happened to the Invincible Armada.

Thus, in order to cross the sea with great bodies of troops, there is only a choice between the three following solutions:

1st. To take advantage of the fact that the sea is free, whether temporarily or absolutely.

2d. To destroy or paralyse the enemy at the outset, and then to cross.

3d. To seek to make the crossing by surprise.

First Case.—The sea is free. The success of the crossing can then only be thwarted by bad weather. As for the landing, it can always be effected if the region has a large extent of coast; as for the rest, everything will depend upon the relation of the means put in operation to the elements of the enemy's resistance. The two expeditions to Minorca were carried on under these conditions, and both were crowned with success.

Nevertheless, when the freedom of the sea is only temporary an offensive return of the enemy must be foreseen, and sufficient

forces must be disposed to save what has been acquired. In fact it is plain that, if la Galissonière had been defeated off Mahon, the English garrison of Fort St. Philip would have been reinforced and revictualed, while the troops of Richelieu would have been seriously compromised.

It is necessary also to look to the future. Unless the landed army obtains overwhelming results,—a desirable but improbable thing,—it will need to have its ranks filled constantly with fresh troops, and above all to be resupplied; for in our day munitions cannot be manufactured on the spot as was done by Napoleon in Egypt. It is necessary, then, to remain in control of the communications after the landing, without which surrender will be the consequence at the end of a longer or shorter time. If it is foreseen that the communications cannot be assured it is best to refrain from the operation.

Second Case.—The sea is not free, but the naval forces at disposal permit risking the hazards of battle. In this case the landing should always be subordinated to a contest which will decide the command of the sea.

One is confronted then with the following alternatives: either he will be victorious, in which case he can cross in security, profiting by the demoralization (of the loser) that always follows a lost battle; or else he will be beaten, and then, instead of losing a fleet and an army, the army at least will be saved.

When one has a marked superiority over the enemy afloat there may arise the temptation to adopt a mixed solution by dividing the forces into two parts: one, the more numerous, designed to mask the enemy squadron in order to permit the other to conduct the convoy and preserve it from the hardy incursions of single ships. This was the solution that was thought of in 1755. It can have only calamitous results. At the very beginning there will never be too much force to clear the passage, and it would be imprudent to jeopardize the game by withholding a detachment. Finally, whatever care be taken to interpose between the convoy and the enemy, one can never be sure of succeeding in it if the enemy maneuvers rapidly and skilfully, profiting by the night hours to steer false courses, or if he masks his movements behind a screen of his light vessels. On the sea the movements of forces are not subject to the same rules as on land, where the troops can only advance by known routes. It is preferable, then, instead of divid-

ing the forces to divide the operation into two parts: first fight, then cross over.

But still it is necessary to be able to fight. It happens most often, however, that the enemy, when he is in inferior numbers, prefers not to face the battle and shuts himself up inside a port. In this event operations cannot be held up until he shall deign to come out; for every delay in the transportation of troops may modify the situation on land and be favorable to the enemy, who often seeks nothing else than to gain time. One is then content to blockade, or at least to watch closely the enemy forces, in order to prevent them from coming out; and, behind this covering fleet, to send the convoy across under the escort of several ships of war. The Americans did this at Santiago.

If the enemy has retired into port after a battle in which he has been defeated or has suffered severe losses, he does not constitute a serious menace because he is then demoralized and has no other object than his security. Such was the case with the Chinese at Wei-hai-wei [21] and it is this that justified the manner in which the Japanese maneuvered when they landed in the vicinity.

Third Case.—The sea is not free, and there is insufficient force to clear the passage. It is necessary then to pass over by evasion (*surprise*).

This was ever the hope of the French government; but we have seen that this hope was always betrayed excepting in the case of the Egyptian expedition, and there the meeting took place after the passage of the convoy instead of before or during the passage.

Is it not logical to conclude that it is always a mistake to risk an entire army under conditions of this sort? Such persistent adversity can not be imputed alone to mischance or to faulty execution; it is rooted solely in an error of principle easy of discovery. To assemble in certain ports a great number of transport vessels, to direct to those same ports columns of troops,—these things cannot be done without attracting attention; thereafter there is no further chance of a surprise and the secret of the operation, which alone can assure success, is divulged. This is why Tourville, Roquefeuil, and Conflans were beaten or dispersed in the immediate vicinity of their convoys, the English knowing perfectly that they would find them there, and nowhere else. It was even a

[21] And it was equally the case with the Russians at Port Arthur at the beginning of the present (recent) war.

happy circumstance for us that the contact did not take place after the departure of the transports, for the disaster would then have been greater still.

In our opinion an operation presenting itself under such unfavorable conditions should be absolutely forbidden.

Nothing is easier than to build plans upon paper for the invasion of England. One takes a chart, notes that the ocean is vast and that ships get lost in its solitude, and therefore concludes that the chances of crossing without being seen are indefinitely more numerous than the chances of being met. But when the hour of execution arrives the dangers that were not discernible at long range come to mind in a flood, together with the consequences in their train. One then hesitates to stake the fortunes of the country upon a throw of the die. The expedition is not given up but one comes to think that everything can be reconciled by having it escorted by a naval force for its protection, and thereby one courts disaster; because, if the escort were sufficient, the issue of battle would be sought beforehand.[=]

Think of the state of mind of the admiral charged with the duty of facing all the unknown possibilities of such an operation! The situation flowing from it is not one that can be laid upon the shoulders of a leader. To convoy an inert mass that is certain to succumb to the least attack without being able to defend itself; to have charge of thousands of human lives without means of safeguarding them; to be unable to anticipate the possibility of flight, even, in case of encountering the enemy; such responsibilities are beyond human strength.

Ask of our admirals to sacrifice their squadrons to assure freedom of passage; none will refuse. Demand of them that they fight against odds of two to one; it has been done, it will be done again. But do not ask of a man that he be an impotent witness to the annihilation of an army upon which the destinies of the fatherland depend.

By causing the expedition to set out from two or three different points there is the advantage of dividing the attention of the

[=] Let us formally forbid ourselves to build schemes of invasion upon a passage by surprise. When the moment arrives to take the sea men have always recoiled, and they always will recoil; there are responsibilities that are beyond human strength. Napoleon himself did not dare face them. If the thing were really possible, how can it be explained that the disasters of the *Hogue* and of *Quiberon* caused the projected expeditions to be abandoned; for the army and the transports were unharmed?

enemy. But unless this is done with the sole object of seeking an occasion to fall in force upon one of the detachments of the enemy, the benefits to be expected do not compensate for the attendant disadvantages; for, the several corps never being sure of being able to leave at the desired moment or to land at the chosen place, the result is compromised from the beginning. The first comer will share the fate of General Humbert.

We conclude, then, if France wishes in the future to take up once more her ideas of invasion, she must from now on undertake the sacrifices necessary to clear the passage instead of beginning again the fantastic operations that have made of the Channel and the Atlantic the graveyard of our navy.

THE FLEET IN BEING.—Let us now examine the problem: What is the role of an inferior force confronted with the menace of an invasion? Should it offer battle at the risk of being defeated and of leaving the passage clear?

The role has been defined by Admiral Colomb in the theory of the "fleet in being." The arguments of the distinguished English historian may be summarized as follows: So long as a naval force exists and makes its existence manifest, an enemy, even superior, cannot undertake a landing; and if he persists in the attempt he places himself in a bad position, and goes to his defeat.

Admiral Colomb bases his doctrine upon the defense of Torrington before the court-martial that tried him for losing the battle of Beveziers. The example does not seem to us to have been judiciously chosen; the argument rests upon what Torrington might have been able to do and not upon what he did. Then too, the author credits the French with plans of invasion of which no trace can be found;[28] finally the English fleet really left the sea free after its defeat by shutting itself up in the Thames. It cannot, therefore, be taken as a model of the fleet in being.

Nevertheless, the considerations that Torrington turned to account, after having planned his defense at leisure, have received the confirmation of facts. In the following year Tourville gave a luminous demonstration of the power of an inferior fleet in his famous deep-sea cruise, during which he prevented the English fleet from attacking our coasts without permitting himself to be run down. Other examples might be cited, such as that furnished

[28] There is nothing in question about them in the correspondence of Seignelay and Tourville after the victory of Beveziers.

by the Invincible Armada,[24] by the fleet of d'Orvilliers in 1779,[25] by the Italians at Lissa,[26] and again very recently by Cervera's squadron, of which we shall speak again later on.

The fleet in being should then, by serving as a menace, paralyse the movements of the enemy. It acts in the manner of troops operating on the rear or flanks of an enemy. Its entire strength resides in its activity and in the doubt in which it leaves its movements shrouded. If chased it necessarily runs away; as soon as it is left in quiet it should seek contact again to keep the enemy under tension. But it is not as easy as may be thought to play at blindman's-buff, even with superiority of speed. Tourville contended that an encounter is inevitable when two fleets are within sight of one another; and the reasons that he gave are not weakened by the advent of steam.[27] To avoid it the enemy must be at a considerable distance, which implies that contact is only made by the scouts. Navigation under sail permitted engaging in what may be called the "game of dead sectors" by utilizing the direction of the wind and its variations. Now only steering false courses can be counted upon; but that resource is uncertain enough, especially in narrow waters; and if the pursuit is active the fleet in being will soon be compelled to take refuge in port. Thereafter it is reduced to impotence; it dies.

Admiral Colomb contends that such is not the case; that even shut up it must be taken into account. Captain Mahan holds the contrary opinion,[28] and without engaging in the discussion we may say that Mahan is justified by the facts.

In fact, as long as Cervera's ships were at sea the Americans put off the execution of their plans for landing;[29] and the influence that a mobile force can exert at a distance is the more remarkable in this instance because no nation ever professed the same degree

[24] The *Invincible Armada* attempted to get its convoy across without taking account of the weaker English fleet; it was defeated.

[25] The combined fleet, not having been able to overtake the enemy, had to give up convoying the expeditionary corps.

[26] The Italian squadron intended to capture Lissa without taking due account of the Austrian squadron; surprised before having time to concentrate, it was beaten.

[27] They rest upon the lack of homogeneity of large fleets.

[28] Mahan, *Lessons of the War with Spain;* and Colomb, *Naval Warfare*, Preface.

[29] This is said by Mahan himself.

of disdain for its adversary as did America.[80] But as soon as Cervera had shut himself into Santiago his squadron had no weight in the flow of events.[81]

The inferior force should, then, keep the sea as long as the enemy does, and should be as fast. If it succeeds in holding him in check until his bunkers are empty the situation is saved for the moment, and perhaps definitively, for all schemes of invasion have been abandoned after a first miscarriage. Why, then, is it contended that speed and radius of action are unnecessary in taking the defensive?

The theory of the fleet in being is attractive, but it is easier to define than to put in practice. It would be dangerous to build great hopes upon its employment; and if it is possible to avert the danger of invasion by the aid of a diversion, this means will always be preferable.

CONDITIONS NECESSARY FOR THE TRANSPORTATION OVER SEAS OF A BODY OF TROOPS OF LIMITED NUMBERS.—Do the conclusions that we have drawn from the great attempts at invasion apply to the transportation of a few thousand men?

Conditions are here very different. As the preparations no longer demand considerable movement of troops and of ships they can remain secret; it becomes possible to do without the aid of the merchant marine, the elements of which are a source of embarassment, and to make up a homogeneous and fast division of several ships of war. Difficulties of navigation are thus greatly simplified, and in place of the expedition's setting out from the nearest point to the enemy's coast in order to diminish the difficulties due to a slow order of march, a point of departure less under observation may be chosen at a distance. In case of meeting the enemy the expedition will doubtless be dispersed; but it will not be fatally annihilated, thanks to its speed. Finally, and above all, the consequences of a failure will be less grave; they will not weigh so heavily upon the issue of the war.

It may then be admitted that it is possible to cross seas of which one has not the command when the operation has been surrounded

[80] The crossing of the Atlantic by Cervera's squadron had consequences that the Spanish government had not foreseen; if it had suspected them it might have profited in order to gain time and put the *Pelayo* and the *Carlos V* in the line.

[81] The same was the case with the Chinese squadron at Wei-hai-wei, and with the Russian squadron at Port Arthur.

with all these guaranties; but this principle is subject to one condition—the expeditionary corps once landed must be able to take possession of the territory, and to maintain itself there on its own resources if the communications remain cut.

Without speaking of Ireland, into which we have been able to throw detachments on several occasions, confirmation of this rule will be found in the operations that have had their scene in the Antilles at different times, and which we have not cited in order not to lengthen our narrative. In those islands, where the English and French possessions were so closely interspersed, it was always possible to choose a propitious moment to land upon the shores of a neighbor; but the conquest remained precarious, or even lacked the time for its accomplishment, if the troops landed did not rest upon the support of naval forces. A study of the facts discloses many occasions when men have allowed themselves to be tempted, thoughtlessly and with no heed of the morrow, by the ease with which a handful of men could be transported and landed; among them were very few where the operation procured any absolute benefits. We do not care to conclude from this that recourse to such operations should be forbidden; but they should be undertaken only with forces sufficient to overcome the resistance of the enemy at one blow, and there should not be the immediate necessity to send reinforcements.

After having studied the principles that should govern conquests of territory over seas, we are now about to see how some large landing operations have been carried through. From this point of view the expeditions to Algeria and to the Crimea were well conducted; that to Wei-hai-wei by the Japanese may be considered a model of its kind; as much cannot be said of those to Madagascar and to Cuba.

THE EXPEDITION TO ALGIERS.—The fleet that carried the expeditionary corps to Algiers left Toulon, May 23, 1830. It was composed of 676 ships, men-of-war and merchant ships, and carried 36,000 men and 4000 horses. The army was commanded by General de Bourmont and the fleet by Admiral Duperré. In keeping with tradition the relations between the two chiefs were far from cordial; moreover, they did not even belong to the same political party.

The fleet set its course towards Africa; but, on approaching the coast, bad weather made it turn back and seek refuge at the Bale-

aric Isles. The land officers, and particularly the commanding general, were made impatient by this delay. There were sharp exchanges between the two chiefs, and altercations arose between the land and sea officers that ended in duels. The army officers did not seem to comprehend that a landing is impossible with the wind blowing on shore, and that even vessels at anchor are often forced to put to sea at such times. What would have happened if the boats loaded with troops had capsized; or if, one part of the expeditionary corps having been landed, the rest had been carried off to sea with the ships? It would not have been admitted as an excuse that the Admiral had yielded to the solicitations of the General. Nevertheless, had the Admiral had to fear an attack by sea, he would doubtless have preferred to take the risk of landing rather than delay in the Balearic Isles; and for this reason the expedition might very well have ended before it began.

The fleet remained in Palma Roads an entire week. Finally on June 13, it anchored off the peninsula of Sidi-Ferruch, and the next day the landing of the troops began without any opposition from the army of the Bey. The first division was put ashore in half an hour, and the 36,000 men were landed in five hours. The same day the Bey's camp was taken.

Several days were necessary to land the material, owing to interruptions due to bad weather. As soon as the operation was completed the army took up the march. After this time the part played by the navy was only secondary.

THE EXPEDITION TO THE CRIMEA.—In the Crimean expedition it was a question of landing 27,000 French, 28,000 English, and 7000 Turks. The fleet, numbering more than four hundred vessels, set sail September 7, 1854, and anchored at Eupatoria on the 13th. The landing of the French began at 7.40 a. m., September 14; at 9.20 a. m. 9000 men were ashore; at noon the three infantry divisions and eighteen guns with their material; before night the three divisions with their trains and horses, the engineer company and all its outfit, the horses of the Spahis, and the horses of the Marshall and of his staff.

The fourth division was embarked on board steamers that had been to the Bay of Katcha to make a diversion; it was not disembarked until the next day.

Such a rapid operation shows preparation to minute details; it was a contrast to the confusion that had attended the embarkation

of the material at Marseilles. It was doubtless understood, after a first experience, that order is a primary condition of every combined operation.

THE EXPEDITION TO WEI-HAI-WEI.—The qualities of organization shown by the Japanese in the Chino-Japanese war were never better thrown into relief than by the expedition to Wei-hai-wei, which was carried on in the dead of winter (—10° C., 14° F.). This operation was peculiar in that the transportation was effected in four convoys, of which only the first was escorted by the fleet.

Some fifty transports, each carrying a large distinguishing number had been gathered at Talien-wan. The expeditionary corps was composed of 25,000 men, 6000 of whom were coolies, and 3000 horses.

The light Japanese squadron began by making a diversion to the westward of Wei-hai-wei, bombarding the city of Ting-chou-foo and landing there 2000 men; then it went to sea off Wei-hai-wei in order to cover the crossing. Meantime the first convoy of fifteen ships left Talien-wan, accompanied by the Japanese squadron and fifteen torpedo vessels.

Upon approaching land the torpedo vessels were detached to watch Wei-hai-wei, while the cruiser Yayeyama went to reconnoiter Yung-Ching Bay where the landing was to take place. This ship arrived at dawn January 20, cleared the beach with the fire of her guns, and dispersed a detachment of 300 Chinese; then it made ready for the anchorage of the convoy, which arrived at 6 o'clock in the morning. Landing stages were immediately constructed at the beach by the carpenters, and the disembarkation began. All the troops were ashore by night.

The second convoy arrived on the 21st, the third on the 23d, the fourth on the 25th, and on the 26th the army was put on the march.

During all this time the Japanese squadron kept the Chinese ships closely blockaded in Wei-hai-wei.

It would perhaps have been prudent to blockade them earlier if they had not already suffered the ordeal of the battle of the Yalu; but in view of their demoralized condition excessive prudence was not a demand of the occasion.

THE EXPEDITION TO MADAGASCAR.—Although we have only concerned ourselves here with landings that have taken place in countries where the invader had no base (expeditions like those

to Mexico, China, or the Transvaal having another character), it is well to say a few words about the expedition to Madagascar because of the teachings of a general character that it affords.

One wonders how France, which was not without experience in combined operations, was able to commit so many faults in this unfortunate affair.

The navy had made the preparations for the expedition; at the last moment it was turned over to the War Department. The navy, wounded in its dignity, took care not to propose its cooperation, which for that matter was not sought, and made ready to judge results; the spectacle was not common-place.

The transports were chartered and loaded with material, but no care was taken to put aboard first the articles that should be unloaded last. Then the transports were dispatched in succession at fixed intervals, but there was a neglect to enjoin any date of arrival, so that the ships, not having the same speed, arrived at irregular intervals. There being no arrangements ready on shore to receive the troops, those that arrived before the date anticipated had to remain on board ship at Majunga Road, where there was soon an extraordinary congestion.

The unloading of the material presented insurmountable difficulties. The lighters had not arrived, and as there was need of articles of prime necessity, such as guns, that were stowed in the bottom of the hold, it was necessary to empty the holds upon the decks in order to find them. There resulted a tremendous loss of time involving demurrage.

Lighters were lacking; but to make up for them six thousand Lefèvre carts had been sent, and were found to be in fact of no manner of use.

The navy had provided a small wharf to facilitate the operation of landing. The army, attempting to do things on a large scale, extended the wharf—on paper—in order to permit ships to lie alongside; but it had neglected to investigate the nature of the bottom, which did not lend itself to a work of this kind. Besides there was not enough time at disposal to permit undertaking so considerable a work, and the ironwork for the wharf went to the dump alongside the Lefèvre carts.

We shall forbear to speak of the mistakes made by the expedition on its march.

Everybody knows that the sailor loves to play at being soldier,

while the soldier adores to play at being sailor. Here it was the last case that arose; instead of turning over entirely to the navy the maritime part, as was done in the expeditions to Algiers and the Crimea, the army had the ambition to act all by itself. The result was just that to be expected. "Let us not overwork our talent...." says the fabulist.

THE EXPEDITION TO SANTIAGO.—If the faults of others can console us for our own, we shall find satisfaction in the way the Americans organized the transport and landing of the expeditionary corps to Santiago.

Thirty-five transports had been gathered at Tampa to transport 15,000 men; but such was the confusion that it was not known exactly how many men had set out. Baggage and material were heaped pell-mell into the ships as fast as it could arrive at the wharf. The absolute want of organization may be judged from the two following facts. The several elements of three batteries of artillery were scattered among five transports, which divided up among them the guns, carriages, munitions, mules, and artillerymen; it is a question if these batteries were ever reassembled. The order having been given to put on shore the horses of two volunteer regiments whose sailing had been countermanded, the horses could not be found; they were finally discovered on board a transport that was already in the stream.

A single line of rails ended at Port Tampa, but it belonged to a private citizen who used it to organize excursions, which only served to make things worse.

Finally on June 8, 1898, several transports sailed off by themselves, and it was necessary to send a war vessel to bring them back. On June 14, the expeditionary corps at last got started. The transports were escorted by several men-of-war; but soon each was navigating without reference to the rest, and the fleet covered an extent of sea of more than ten miles.

If only one of the Spanish gunboats then scattered among the ports of Cuba had been commanded by a man of energy, that would have sounded the knell of the expedition. It would have sufficed to disperse all the rest of the transports if one or two tardy ones had been sunk.

The convoy proceeded slowly. The average speed was less than seven knots although the weather remained good. This indifferent result is nowise surprising, for there had been a lack of

time necessary for selection among the merchant ships. Furthermore all express steamers had to be converted into auxiliary cruisers.

Finally on June 20, this extraordinary fleet arrived off Santiago, after passing along the coast to the end that nobody should be ignorant of its presence. On the 22d a diversion was made to the westward while the landing began east of the city, at Daiquiri. It was made under the same conditions as the embarkation. Thus only 6000 men were put ashore the first day; it is true that the surf greatly hindered operations and smashed several boats. It was not until the 26th that the material was landed; but already some detachments had been put on the march, without order, taking the first road that came in sight, so that the army, whose objective was the capture of the heights commanding the entrance to Santiago, came out under the walls of the city. To complete the confusion, the inevitable quarrel arose between the Admiral and the General.

Nothing is more curious than the fact that this expedition, so badly organized and so badly led, was crowned with full success. At the moment when General Shafter, fearing disaster, was debating about reembarking, Santiago, defended by fatuous generals, laid down its arms.

In the midst of all these shortcomings the American Squadron did its duty. Closely blockading Admiral Cervera, it assured the freedom of the sea and guaranteed the safety of the landing.

From the preceding examples we can deduce the general rules that should govern the transportation and disembarkation of an expeditionary corps when the sea is free.

The preparations require the constant cooperation of the army and the navy. It consists in the determination of the apportionment of the different bodies and of the several arms on board the ships, in order to be able to land them in a way that is logical and at the same time rapid; in the distribution of material to each transport, and in its stowage in such an orderly way that the articles immediately needed will arrive first on the beach; finally, in assembling the greatest possible number of means for landing. Nothing of all this can be improvised. It is work that demands long and painstaking application, and it ought to be prepared in times of peace, at least in its broad outlines.

The embarkation will always be easy because a closed port provided with wharves will be available. It will suffice to proceed with method, and to embark the material first in order to obviate the long standing about so wearisome to the personnel.

Let us now follow the convoy to sea. It will be escorted by all the warships that can be assembled; although we are supposing the sea free, it is always a matter of concern to have a strong escort. At the outset, freedom of the sea does not imply that the enemy has no longer a single ship in a condition to go to sea; it means simply that he is unable to put a sufficient force in line to inspire serious fears. One cannot, therefore, put a convoy at the mercy of a single cruiser, nor can one take too many precautions. Ships of war are well provided with means to facilitate the landing, and this is an added reason for increasing the strength of the escort.

In order to reduce the number of transports and to accelerate the landing, troops will be embarked on board the warships, excepting those of the light squadron that may be called upon to fulfil special missions. The Admiral will make of these naval vessels three parts; the first, composed of out-of-date ships will act as guides for the convoy, each serving as file leader for a given number of transports; the second, divided in groups if the convoy is numerous, will form the escort; the third, composed of light vessels, will remain available for any duty.

If the enemy is anticipating invasion it will be well to make a demonstration in order to divert his attention. Even though the defense may have enough perspicacity to doubt that it is more than a feint, it will none the less be obliged to guard against all eventualities.

The place of landing will be preferably a beach of large extent, and one that is not too near any large center. It would be of advantage to make use of a closed harbor, but the safe havens are generally provided with means of defense in civilized countries, and it is evident that a landing by main strength is to be avoided at all haazrds. It is almost always necessary to be content with an open roadstead, and then weather conditions become an important factor; the state of the sea may necessitate the postponement of the landing for several days.

The landing is preceded by a reconnaissance made by a light vessel to be assured that the beach is easy of approach and has not been put in a state of defense.

A division composed entirely of warships will be the first to anchor. It will immediately land the covering force, an affair of a few minutes, and will mark the anchorage of the convoy. It is not desirable to make up the covering force from the (naval ships') landing companies. Besides the fact that sailors make indifferent soldiers, the men-of-war will need all their own complements for the discharge of the ships, and the service of the beach and of the boats.

After the convoy has anchored, the first division, as soon as its troops are landed, will get underway to do the same covering duty on the ocean side that the force landed by it has done on land.

The beach will be commanded by a naval officer, who will have flags placed to indicate the points where the boats of each transport shall land, and the points of assembly for the several corps. A mixed personnel placed at his disposition will give permanent directions to the detachments for their guidance as soon as they arrive at the beach.

As soon as this preliminary work has been done the landing of the troops will begin, the landing of the material in the lighters going on at the same time.

The rapidity of this operation will depend only upon the means at hand and upon the orderliness governing the general movement.

According to the indications of former expeditions, it may be reckoned that not less than three days will be required to land all the impedimenta of an army of more than 30,000 men. Nevertheless much time may be gained by constructing especial material for the purpose, and by numerous exercises in time of peace. As for the troops, they can be landed in a few hours.

This length of time, three days, gives an idea of the chances of an attack developing from the side of the sea. It is reasonable to admit that the enemy will hold his most important reserves near his own coast if he has naval forces at disposal and is in fear of invasion; in which case he will need little time to reach the landing place.

In the transportation of an expeditionary corps the navy comes in only to conduct the troops from one point to another; it is an intermediary. Delicate though its function may be, it is none the less a secondary one, and the principal objective must be attained by the land forces. It is therefore entirely natural that

the supreme command should be lodged in the general. But, none the less, the admiral retains his independence in the execution of the program devolving upon him, which is: to take the troops at some given point and to set them down at another point.

Once the troops are embarked the admiral is responsible for their safety. He may be assailed from one moment to another by a tempest, that permanent enemy of the sailor; it is he alone then, that should regulate the order of sailing, give the route to be followed, and decide whether or not the time is fit for the landing. The general, on the contrary, finds himself on an element with which he is not familiar, and regrettable consequences might result if he undertook to impose his will.

We have seen in the expedition to Algiers a remarkable example of the situation that may arise for an admiral, due to the elements, and we believe that the bad part fell to the general commanding in chief, at least in this instance.

After all we may rest assured that the admiral will not delay needlessly on the way. The burden of conducting large assemblages of merchant ships is too thankless, and it demands too many precautions and cares, not to make one seek to reduce its duration to a strict minimum; and no time will be lost except in obedience to imperious necessity. Let it not be forgotten that there is a constant risk of collision among all these transports, strangers to squadron sailing, and that the admiral will count his ships every morning to assure himself that none has gone wrong during the night.

But though the admiral in his responsibility is free to conduct the fleet according to his own judgment, that is no reason to relegate the general to a merchant steamer, as was done in the last combined maneuvers. He is properly only a passenger, but he is none the less the commander-in-chief; and if he refrains from weighing upon the decisions of the commander of the fleet, he has the right to know what is going on, and the reasons for it. It is even to be desired that he have this knowledge in order to calm his impatience or his uneasiness. Moreover, circumstances may arise to impose a modification of the original program; the intervention of the commander-in-chief then becomes necessary. For example, if persistent winds make the landing place fixed upon unapproachable, it will be necessary to choose another. The admiral will then propose a new solution; but it ought to be

accepted by the general, because a landing on hostile soil at one place or at another is not a matter of indifference from the military viewpoint. Again it may happen that the convoy is partly dispersed by gales. The admiral will tell the general the time he estimates necessary to gather in the wanderers, and it will be the general's duty to decide whether to land with his forces reduced, or to seek the vessels that have strayed, or finally to give up the enterprise.

In a word, the relations between the two chiefs should be permanent; and this is not possible unless they are on board the same ship. Can the possibility be admitted of their being separated by the chances of a sea voyage?

When combined operations have only a secondary importance, and admit only of reduced numbers, the action on land will no longer have a preponderating influence upon the issue of the war. It seems reasonable then to exchange parts and give to the navy the supreme direction. In a naval war nothing can be done without ships; in order not to compromise his naval forces in an isolated attack the decisions ought to be made by the naval commander who is informed about what is going on on the sea, and what commands the line of retreat.

It is astonishing what lamentable results have arisen simply from dissentions between the land and the sea commanders; and in this particular other nations have no reason to envy France. All these quarrels seem to us very paltry affairs, and it is to be regretted that an article has not been introduced in our Regulations to remind officers that the susceptibilities of individuals must yield to the good of the service and the end to be attained.

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

ON A SYSTEM OF LIGHTING SHIPS AND LIGHT-HOUSES IN SUBSTITUTION FOR THE ONES AT PRESENT IN USE.

By JOHN HERBERT CLAIBORNE, M. D., New York.

TOGETHER WITH SOME EXPERIMENTAL OBSERVATIONS IN THIS DIRECTION.

By JULIAN S. JONES, Attorney-at-Law, Baltimore, Md.

Πλείη μὲν γὰρ γαῖα κακῶν, πλείη δὲ θάλασσα·
νοῦσοι δ' ἀνθρώποισιν ἐφ' ἡμέρῃ ἠδ' ἐπὶ νυκτὶ
αὐτόματοι φοιτῶσι κακὰ θνητοῖσι φέρουσαι
σιγῇ, ἐπεὶ φωνὴν ἐξείλετο μητίετα Ζεύς.[1]

—Hesiod, *ΕΡΓΑ ΚΑΙ ΗΜΕΡΑΙ*, l. 101–105.

The following suggestions and reflections first appeared in substance in a paper which I presented before the International Marine Congress, held in Washington, D. C., in 1889.

I disclaim any practical knowledge of seamanship, and base the thoughts which I here present for consideration upon certain phenomena in color-perception and physiological optics.

It is a well-recognized fact that color-blindness does exist—complete color-blindness for one or more colors, and partial color-blindness for the so-called "confusion colors." Any system of lighting ships which requires the correct appreciation of color on the part of those responsible for the ship is a system which is liable to produce disaster, for even complete color-blindness escapes detection at times, while partial color-blindness easily escapes detection. The modern systems of examination for color-blindness have been brought to a high standard of accuracy, nevertheless they are fallible and so are scientific men.

[1] Translation: "The land is full of evils, and the sea likewise. They come upon men in the day, but at night they wander about, accidentally bearing ills to mortals in silence, since all-wise Zeus has spoken."

It may be said that the most reliable of the systems for the detection of color-blindness is based upon the Young-Helmholtz theory of color-perception, and while that appears to be the most satisfactory theory that has yet been advanced it is nevertheless a pure theory, the result of a brilliant act of induction.

The system which I suggest in the following paper entirely eliminates the necessity of recognition of the spectral colors, and hence the error of color-blindness—partial or complete—plays no part in the system. Moreover, I will endeavor to show that the

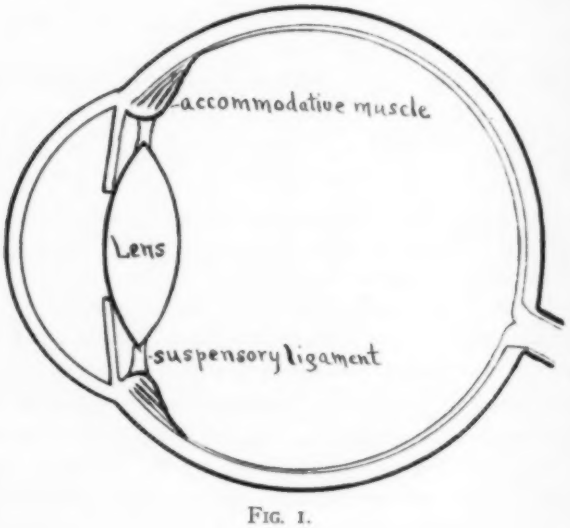


FIG. 1.

present system of using red and green lights on the port and starboard, respectively, involves the element of misjudgment of distance as well as the element of undiscovered color-blindness for one or both of these colors.

A system of lighting ships, therefore, which will eliminate or minimize misjudgment of distance and entirely eliminate the dangers arising from color-blindness, academically, at least, is preferable to the present system and logically ought to replace it.

I recognize that the system which I suggest is radical and revolutionary. I am also profoundly cognizant that I am entering a field in which I have no practical knowledge whatever, and that my suggestions may even give offense; nevertheless, I consider it advisable to set them forth.

In order to develop clearly the ideas which I wish to present, I beg leave to offer a few preliminary considerations upon the anatomy of the eye and the physiology of vision.

Within the eyeball lies the crystalline lens, just behind the iris and enclosed in a transparent capsule. The ciliary muscle, or muscle of accommodation, is ring-shaped and lies just beyond the periphery of the iris. From the ring-like muscle depends the suspensory ligament of the lens, consisting of an anterior and a posterior layer, the former being inserted into the capsule on the anterior surface, and the latter into the capsule on the posterior surface of the lens. (See Fig. 1.)

By daylight (white light) the normally refracting eye sees clearly distant objects (those at or beyond 20 feet) by virtue of

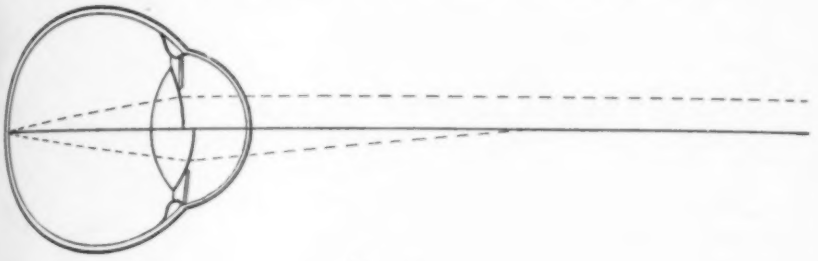


FIG. 2.

its refractive media, when the muscle of accommodation is in a state of rest, for rays of light coming from objects at 20 feet are practically as parallel as those that arrive from infinity. When objects nearer than 20 feet are looked at it becomes necessary to add some power to the refractive media in order to see distinctly, since rays of light that come to us from objects nearer than 20 feet are divergent. It follows from this that the nearer objects are to us (within 20 feet) the greater must be the power added to our refractive media in order to see them distinctly. When, then, it is necessary for the normally refracting eye to see distinctly objects within 20 feet the muscle of accommodation contracts, thereby shortening its antero-posterior diameter. As this is done, the tension upon the anterior surface of the lens by the anterior layer of the suspensory ligament is relieved and the crystalline lens, which is elastic and resilient in its nature, springs forward. In this manner a *positive meniscus* is added to the eye, whose strength varies directly with the nearness of the object looked at. (See Fig. 2.)

Our appreciation of the distance of objects is derived in several ways. In the first place, experience teaches us the meaning of clearness, tone, and hue for great distances. The appreciation of solidity and projection which is furnished by the conjoined action of both eyes is of value in the determination of moderate distances only. It is a fact familiar to all that large objects, like mountains, at great distances lose their solidity and appear to be banked up against the horizon. Their distance is judged chiefly by clearness, tone, and hue.

The convergence of the visual lines also assists us somewhat in forming our judgment of distance; this element, however, is obviously of value only for objects that are within 12 feet, for the visual lines of normally refracting eyes converge so that they

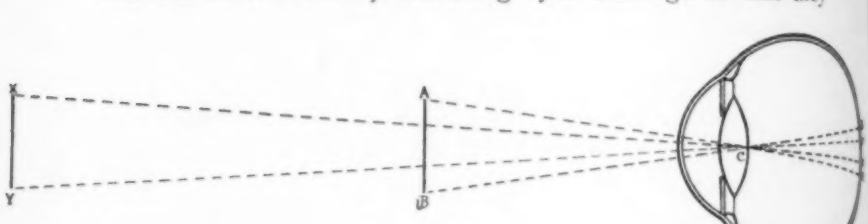


FIG. 3.

intersect each other at the distance of about 12 feet when the eyes are directed at or beyond this point. When we look at objects nearer than 12 feet there is a greater convergence of the eyes. We are accustomed to measure distance within this point, then, partly by the degree of convergence necessary to see objects distinctly.

We also estimate the distance of objects by their sizes and appreciate their recession or approach by the decrease or increase in size of the visual angle under which they are seen. By looking at Fig. 3 the meaning of this statement becomes clear. The object AB and the object *xy* are exactly the same size. At the first glance the object AB, which is nearer to the eye, appears appreciably larger, but if it be measured it will be found to be exactly the size of the object *xy*. It appears larger to the eye because the angle *A c B* is larger than the angle *x c y*. A striking illustration of a rapid decrease in the size of the visual angle is furnished to one who regards the railroad track from the rear portion of a rapidly moving train. The rails seem to converge as the train

proceeds—the greater the distance of the fixed point the nearer together seem the rails, and the more rapid the motion the more rapid the convergence—and yet they are separated by the same distance at all points.

Lastly, the amount of accommodation necessary to see an object distinctly is an element in the data by which we judge of distance. Let it be remembered that by daylight accommodation is used only for those objects that are within 20 feet. In the matter of colors, however, it appears to be different. Here it becomes necessary to refer to the spectral colors and our perceptions of them.

White light is composite, being constituted of a mingling of the primitive colors—red, green, and blue. We know that at one end of the visible solar spectrum—say, the right—lies violet, the color whose light waves have the greatest refrangibility; that at the other end, the left, lies red, the color whose light waves have the least refrangibility; and that half-way between the two lies green. The waves of luminous ether which produce the sensation of red upon our retinæ are the longest, have the slowest rate of vibration, and are refracted with the greatest difficulty of all rays. Those waves of luminous ether that produce the sensation of violet upon our retinæ are the shortest, have the most rapid rate of vibration, and of all the rays are refracted most easily. Each color, then, has a definite wave-length and a definite rate of vibration. The wave *decreases* in length from red to violet; its rate of vibration *increases* from red to violet.

Now, if it be true that each colored light has a definite wave-length and rate of vibration, and if it be true that white light is the composite of the colored lights, white light should have a wave-length and rate of vibration that equal the average of the wave-lengths and rates of vibration of all the colors of the solar spectrum; and there must be at some point in the spectrum a color whose wave-length and rate of vibration equal the average of the wave-lengths and rates of vibration of all the colors. There must then be in the solor spectrum a color which resembles white light in this respect—that its wave-length and rate of vibration equal those for white light. If a number of dots corresponding to the primitive colors—red, green, and blue—be made upon a blackboard, they will appear to be at different distances as seen by different people. (See Fig. 4.) To me, for example, and probably to the majority of persons, red appears nearest, green next,

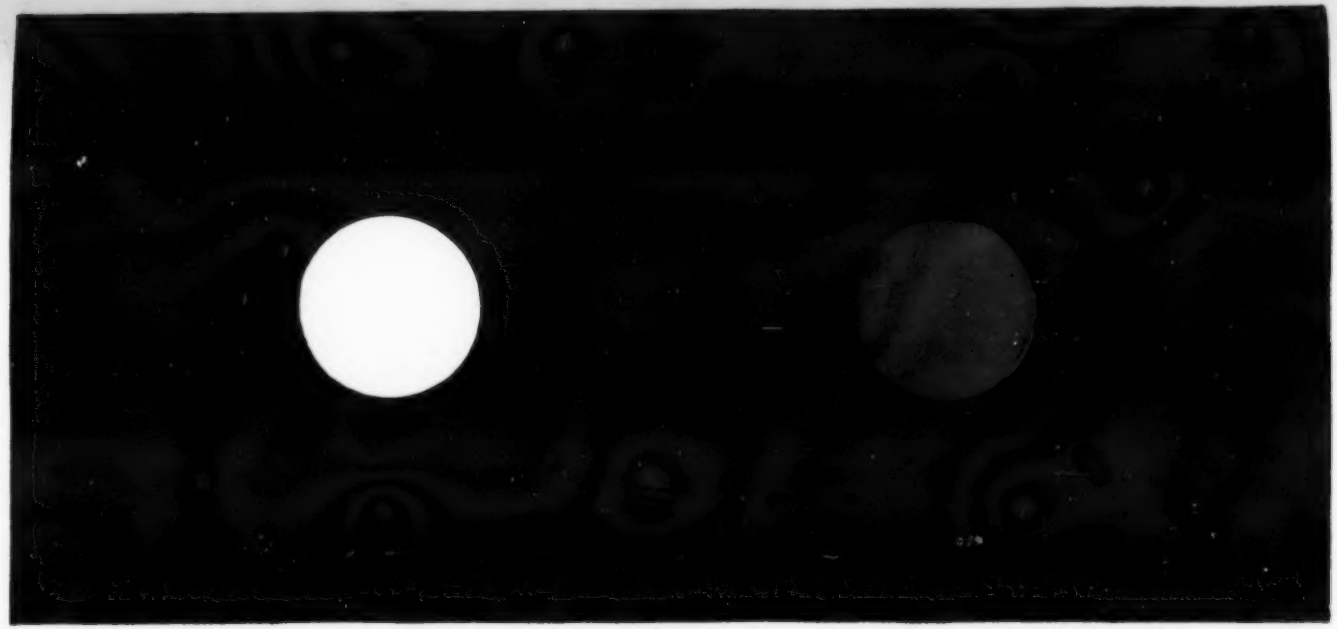
and blue farthest. I have made this experiment with a great many people and have found that to none have all the colors appeared at the same distance. Assuming the truth to be as it appears to me, and as I have found it to be to the majority—viz., that red seems nearest, green next, and blue next to green—there is an increasing scale of nearness for the colors passing from the right end of the spectrum to the left. A green spot placed by the side of a white one seems to be at about the same distance, though on careful inspection it will appear to be a trifle farther. (See Fig. 5.) If a yellow one be placed beside a white one, the yellow generally appears the nearer. (See Fig. 6.) Yellow, white, and green, then, stand very close to each other.

Now, since green appears slightly farther than white, and yellow slightly *nearer,* the color whose wave-length and rate of vibration equal that for white light probably lies in the *invisible* spectrum, midway between green and yellow. Our visual apparatus does not take cognizance of this color.

It is now assumed in this argument that we measure the distance of the various colors by virtue of an act of accommodation, and of course the greater the accommodative act the nearer the object appears. The long waves require more effort, and hence red, which has the longest waves, appears nearest; the green, which has wave-lengths less than those of red but longer than those of blue, appears next; while the blue, which has the shortest, appears farthest.

In order to judge of distance at sea during the night we have practically nothing to do with clearness, hue, and tone. The appreciation of solidity and projection must be of value in direct proportion to the clearness with which objects are seen. Those elements, therefore, would be of little value, if any, at night, in determining the nearness of a vessel. From the reason given before, the convergence of the visual angle formed by the object would be of great service, if only enough light be present for the outlines of the object to be seen distinctly. If the night be very dark, this is practically out of the question. Moreover, it is probable that the lookout fixes the lights aboard of a ship owing to their conspicuousness, rather than the hull, in determining its distance. Since only one light to the side is used, the visual angle under which *it* is seen as the vessel approaches or recedes changes to such a small degree that any comparison based on that datum must be uncertain.

FIG. 4.



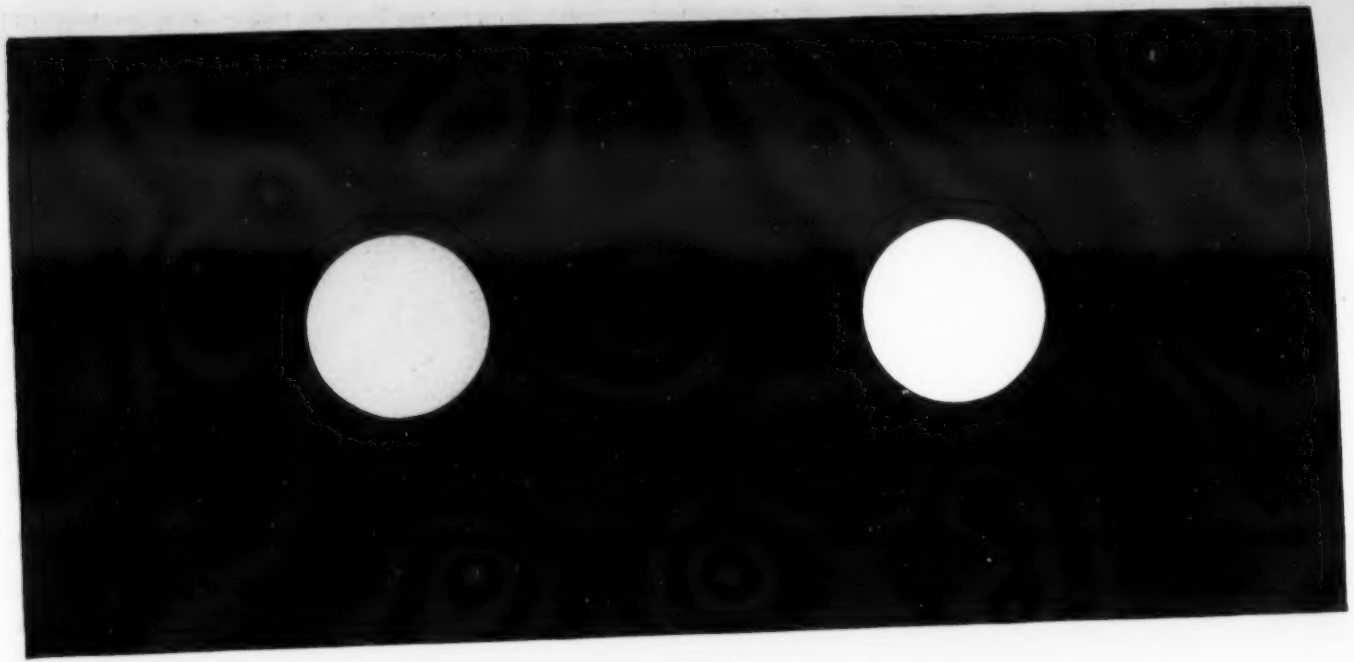


Fig. 6.

FIG. 7.

FIG. 8.

Let us suppose, then, a steamship approaching on a very dark night, dead ahead; nothing is seen distinctly save the red on the port, the green on the starboard side, and a white light on the mast. The lookout, or pilot, is thrown practically at the mercy of his accommodation alone to estimate the distance of the approaching mass. He fixes first, let us say, the red light, and computes the distance; then the green, and calculates for a different distance; then the white; and finally ends by becoming confused and fails to act one way or the other in time to prevent a collision. I do not doubt that many collisions on the water at night have occurred in this way. The newspaper recitals of many such accidents seem to point to it. From an account in the *New York Herald* of a collision that took place off the coast of Jersey on a dark night, between a steamer and a sailing vessel, I quote the following:

> She was heading athwart the steamer's course and was under full sail. Rapidly the two vessels approached each other and here some one *lost his head*. Contradictory orders rang out in sharp tones of command upon the night air, and finally the engines of the *Atlas* were reversed. But too late, a moment later there was a stunning crash and then a recoil."

Both vessels were burning their lights properly, and no mention was made of a fog. If any one will only row to midstream of the North River at night and endeavor to make some rough estimate of the distances of the various colored lights that will be seen, he will be amply convinced of the difficulty attending such judgment. I do not deny that experience is a great advantage, but no amount of experience will render judgment practically certain in such rapidly changing focusing of the eye.

Since the institution of examinations for color-blindness in all officials in the marine service, undoubtedly many accidents have been prevented. But the difficulties delineated above exist to some extent independently of this defect. It might easily happen that a faintly saturated green or red light on a misty night might be so altered by the refraction of the surrounding misty atmosphere as to cause confusion in any one's mind, whether partially color-blind or not. By persons who possess normal color-perception a faintly green light may be mistaken for a white. This observation is consistent with the preceding argument. I have observed this frequently in my own case, particularly on misty nights. And this point has also been accentuated by an unsolicited remark from an

intelligent yachtsman that on misty nights he finds considerable difficulty in making out the exact color of a faintly green light until he gets very near to it. Doubtless many others have observed the same thing. Since white light is the kind with which we are most familiar and is that upon which we can base our conclusions of distance most correctly, and since all who have normal acuity of vision can invariably recognize this, it seems to be preferable to colored light.

The light of an ordinary lamp is practically white, and we do not find any one incapable of recognizing *it*. Of course the nearer it is to white the better it would suit the purpose for which it is intended. It goes without saying that a bright light is preferable to a dim one. And just here is suggested another objection to colored light. Inasmuch as the source of illumination in lanterns is a white flame and the glass through which the rays pass gives the color, the deeper the glass is saturated with red or green, for instance, the greener or redder must be the transmitted rays, and hence the less intense (bright) must the color appear.

White electric light, then, would be the one *par excellence* for our purpose. This would be practicable for large steamers, at least; for smaller craft, the plain white lantern would be adequate.

The question arises as to how we would mark the port from the starboard side of a vessel. I believe that two white lights arranged in a vertical series, with a known distance between them on the port side, and some other simple geometric figure with given distances between its salient points for the starboard side, would be advisable. Bearing in mind the excellent mnemonic by which the position of lights in the present system is remembered, the figure suggested below for the starboard side—a parallelogram which bears some resemblance to a *star*—I believe to be appropriate.

Lights arranged in a horizontal series fore and aft would obviously be objectionable, since if they should happen to fall in the same line of vision they would appear single. This could easily happen if an observer were on a vessel approaching directly ahead or directly astern. There could be no such objection in arranging them vertically, since then a person would have to be directly above or below in order to get them in the same line of vision. Let us say some geometrical figure, a parallelogram, and let the distance between its vertices be known—its measurements. We would then have the salient points of a figure which the mind could

complete by imaginary lines. Under these circumstances, if a vessel were under way its approach or recession could be judged by the varying size of the figure—in other words, by the increase or decrease in size of the visual angle under which it would be seen. Under the system of colored lights at present in use, a mariner on a dark night has to depend upon intensity and upon his accommodation to judge of distance. That this must be uncertain, I believe I have sufficiently demonstrated.

Under the system of white light with the adoption of a geometrical figure, the accommodation is a constant quantity for a given distance; the increase or decrease in the size of the figure has a known value, and *the possibility of color-blindness as a source of error is absolutely eliminated.* It may be argued that at great distances the lights may be merged into one or be so indistinct that the figure cannot be made out clearly. If curiosity alone impel an officer at such a distance to find out the direction in which a ship is sailing, his night glasses would enable him to do so better than if there were a red light on the port and a green one on the starboard side. In the matter of collisions it would be a *reductio ad absurdum* to speak of them at such distances.

We have only considered the question in relation to weather not foggy. The advantages of the system which we suggest over the present system, we believe will hold good even in foggy weather, so far as accidents can be prevented under such circumstances by means of a system of lighting.

The near-sighted person, to be accepted into the marine service—if accepted at all—must have his error corrected in order to see distant objects clearly. The far-sighted person may see perfectly distinctly in the distance without glasses, but having been accustomed always to a certain amount of accommodation for a definite distance, he probably obtains as correct an idea of distance through this means as does a person with normally refracting eyes.

Some years ago a number of men in the pilot service of New York Harbor were discharged on account of color-blindness detected after they had served a number of years. These men were thus thrown out of employment and their useful knowledge of the topography of the bay and its approaches has been lost. The substitution of some method of ship lighting that would exclude the necessity of perfect color-perception would allow the reinstatement of these men.

This line of thought has suggested the idea of having the lights on lighthouses arranged in the form of a parallelogram.

It should be the purpose of warning ships at sea of the proximity of a dangerous coast, not only to convey the information that such a thing exists but also to give an idea of the distance at which the danger lies. Under the present system of lighting lighthouses no real idea of the distance of the light can be obtained, unless the ship be near enough to be in imminent danger. If a parallelogram were constructed of intense electric lights and placed upon a lighthouse, experiments could be made to determine the exact size of the figure at different distances, and the distance at which the figure loses its outline.

I repeat that while I appreciate the radical character of the suggestions in regard to the lighting of ships, I do not think that objection could be urged against the application of the illuminated parallelogram to lighthouses. The figure could be made much larger than on ships, and hence could be seen much farther at sea. If the lighthouse be on land, it would not be possible for any of the salient points of the figure to be eliminated by the body of the lighthouse coming between them and the eyes of the observer on the ship. Moreover, by a simple calculation of triangulation the exact distance could be computed by the modern range-finder. The present system of lighting lighthouses furnishes little or no data for the judgment of distance, and without this knowledge no definite safety exists. By another mathematical calculation the exact angle at which the ship approaches the coast can be determined. In any position whatever, the vertical lights of the figure must remain constant, but the two horizontal lights will revolve by parallactive movement upon a vertical axis, and the distance between the horizontal diagonals for a given distance when approached at right angles being known, a simple computation would give the angle at which the ship is heading for the coast. This, of course, will apply also to the parallelogram of the starboard side on shipboard.

The present revolving white light is confusing, and the alternating red and white still more so. Under the present system intensity must be the sole medium for the judgment of distance on a black night, as a ship approaches a lighthouse.

The following experiments bearing on the subject were made at my suggestion by Mr. Julian S. Jones:

EXPERIMENT I.

Four ordinary white-light lanterns with wicks $\frac{3}{4}$ of an inch wide were used.

A parallelogram was constructed of strips of wood, as represented in Fig. 1, the diagonals of which were respectively 5 feet (*ad* in Fig. 1) and 4 feet 6 inches.

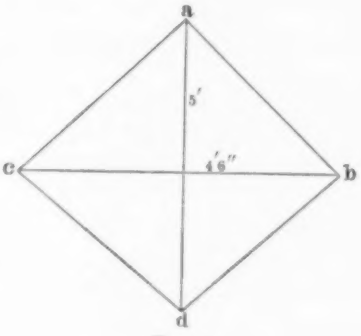


FIG. 1.

Each light was fitted with an inboard screen projecting 2 feet forward from the lights so as to prevent them from being seen across the bow [1] and from the after part of the boat.

The lights thus fixed were respectively placed at each of the four corners or vertices of the parallelogram, represented in Fig. 1 by *a, b, d, c*. The parallelogram was then placed on the starboard side of the boat, parallel to the side of the boat—that is, the diagonal *c b*, in Fig. 1, was parallel to the side of the boat, while the diagonal *a d* was perpendicular to the same side. Thus the parallelogram of four white lights took the place of the green light ordinarily used. Observations were then taken from another boat, with the following results:

1. When directly approaching "head and head" toward each other, the outlines of the parallelogram could not be seen, but in its place three lights in a vertical line appeared one above the other. The cause of this was that the lights *c* and *b* (Fig. 1) were in the some horizontal plane, and from a position in front of them appeared to be one light.

2. From a position 10 degrees to the starboard side of the light boat, the four lights forming the outline of the parallelogram were distinctly seen.

3. From a position $\frac{1}{2}$ mile distant the four lights forming the outline of the parallelogram were clearly seen, but the parallelogram itself did not appear more than one-half the actual size.

4. From a position one mile distant, the four lights could not be seen separately; the outlines of the parallelogram were clearly seen, but appeared only about one-fourth or one-third the actual size.

[1] From the U. S. Statutes Rules for Navigation.

5. From a position 1½ miles distant, a parallelogram was seen with some difficulty, but it appeared only about one-sixth the actual size.

6. From a position 2 miles distant, the four lights appeared to be one light with a dark spot in the center.

EXPERIMENT II.

In this experiment the lights were fitted with inboard screens, as described in Experiment I.

Two white lights were used, one being placed vertically above the other at a distance of 4 feet 6 inches. These two lights were thus placed on the port or left side of the boat, in place of the red light, and observations were then taken with the following results:

1. When directly approaching "head and head" toward each other, both lights were clearly observed.

2. From a position ½ mile distant, both lights were distinctly seen, but they appeared to be not more than 2 feet 6 inches apart.

3. From a position 1 mile distant, the two lights were seen, but appeared not more than one foot apart.

4. From a position 1½ miles distant, the two lights were with difficulty seen, but did not appear more than 3 or 4 inches apart.

5. From a position 2 miles distant the two lights appeared to be one light.

Remark 1.—All the observations in both experiments were taken without the aid of glasses.

EXPERIMENT III.

(This experiment was suggested by Mr. Wm. M. Thacher, Attorney-at-Law, New York.)

Conditions.—A parallelogram of four white lights, in light boxes, as described in Experiment I. The parallelogram of four white lights was placed on the shore; 20 feet due east of this parallelogram was placed a green light; 20 feet due west was placed a red light. The green and red lights were each of the same intensity as each of the white lights composing the parallelogram of white lights, and were placed in similar light boxes.

OBSERVATIONS.

Observations were then made from a boat as follows:

1. At a distance of ¼ mile all of the lights appeared very bright. The green light appeared to be slightly farther away than the parallelogram of white lights and the red light.

2. At a distance of ½ mile, the green light appeared slightly farther away than the parallelogram and the red light. There was very little apparent difference between the distances of the parallelogram and the red light. One observer thought the red light nearar, while another thought the parallelogram nearer, and a third was undecided.

3. At a distance of 1 mile, the green light appeared slightly farther away than the parallelogram and the red light. The respective positions of the parallelogram and red light to each other appeared the same at the distance of ½ mile.

4. At a distance of 1½ miles, the green light appeared dim and appeared to be slightly farther away than the parallelogram and the red light. There was still doubt as to whether the parallelogram or the red light seemed nearer.

5. At a distance of 2 miles, the green light was seen only at intervals, and appeared somewhat farther away than the parallelogram and red light. Doubt still existed as to whether the parallelogram or the red light seemed nearer.

6. At a distance of 2½ miles the green light was not visible. The red light was seen only at intervals.

7. At a distance of 3 miles the red light was not visible. The parallelogram was seen plainly.

I am not unaware that the range-light system was suggested and admitted at the International Marine Congress which met in Washington in 1889. The system, while it involves in a measure one of the ideas contained in the system herein suggested, was not made obligatory, is therefore not in use by all ships, and, while it may give some idea of the distance of a ship and the angle at which it is being approached, is faulty in that it does not differentiate the starboard from the port and does not eliminate the element of color-blindness or the confusion of judgment caused by the comparison of red and green, or either with white, at night.

Let it be remembered that to the green-blind man, green seems like a dirty gray, and that to the red-blind man red is green. A pilot totally color-blind for red will, of course, see green when he looks at the port light, and may think it is the starboard. A green-blind man will see dirty white when he looks at the green or starboard light. But again, let it be remembered that complete red- and green-blindness sometimes escapes detection, and that those partially blind for red—and particularly those for green—frequently escape detection.

The partially red-blind man is not so great a source of danger, because his vision at least gives him the idea of a modified green, but the partially green-blind man may readily mistake certain shades—particularly light ones—of green for white, and the fact that the misty atmosphere often causes confusion when green is looked at by those with normal color-perception has already been sufficiently emphasized. *It is this man, the partially green-blind one, who is the fruitful source of danger in seafaring.*

To sum up, the present system has the following disadvantages:

1. The possibility of total color-blindness for red or green.
2. The possibility of partial color-blindness for red or green.
3. The confusion which exists in the mind of most men as to the distance of red and green lights.
4. The added confusion which is caused by comparing red and green and white.
5. The reliance for the estimation of distance upon the intensity or brightness of a light.
6. The utter impossibility of judging the distance of a single light by the increase or decrease of its size in approach or regression respectively.

The advantages of the system herein suggested are:

1. The elimination of color-blindness, partial or complete.
2. The absence of the mental confusion which results from the simultaneous comparison of red, green, and white, or any two of them.
3. The substitution of red and green by a uniform standard—white—recognizable by all who have the requisite amount of vision for seafaring.
4. The employment of definite geometrical figures to indicate the starboard and port—a star for the starboard and two lights in a vertical series for the port.
5. The reliance for estimation of distance upon a known visual angle, determinable by the range-finder with mathematical accuracy.
6. The possibility of the estimation of the angle at which a ship is being approached on the starboard by the changing angles at which the horizontal vertices of the parallelogram are seen.
7. The substitution of the white parallelogram for coast lighthouses in place of those at present in use.

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

INSTANTANEOUS POSITION PLOTTER AND COURSE INDICATOR.

By COMMANDER ROY C. SMITH, U. S. Navy.

It sometimes happens that in well charted waters it is desirable to plot the ship's position at frequent intervals, or continuously; and it may be desirable to know the ship's head independently of the compass, the error of which, from lack of recent observations or by change of latitude, may not be sufficiently known.

This apparatus will accomplish both of these objects instantaneously with an accuracy greater than that of ordinary cross bearings, and but little less than that of sextant angles; both of which methods require time, and which give the position only, not the course.

The principles employed are as follows: assuming the ship at rest, her position is determined approximately by two compass bearings, more accurately by three. If the three bearings cross in a point the deviation is assumed to be 0. If they do not so cross, it is possible to find both the true position and the deviation (assuming always that the chart is correct). The first impulse is to locate the true position in the center of the triangle formed by the intersection of the three bearings. This may or may not be correct. It is reasonably correct if the objects are equally distant from the ship and are at approximately equal angular distances apart. But the true position may be outside the triangle altogether. The rule is, facing successively each object, the true position is on the same side of all the lines of bearing successively, that is, it is to the right or to the left, of them all (facing the object), and its distance from the lines of bearing is proportional to the distance of the objects. This will be clear from Figs. 1 and 2. In each case the dot is the true position. The full lines are

the compass bearings, the dotted lines the magnetic bearings (also true bearings if the variation is assumed as 0, which it may be in the discussion), and the angle at each object between the full line and the dotted line is the deviation, that is, it is the same angle at each object. Also each dotted line must be on the same side of each full line, facing the object, since the deviation is always the same way (easterly in the figures). So it follows that the distance of the true position from each line of bearing is proportional to the distance of the object, being that distance multiplied by the sine of the deviation. The true position is inside the triangle in Fig. 1, outside in Fig. 2. Also in Fig. 2, the true position is nearest to the line of bearing of A, the nearest object, next nearest to that of B, the next nearest object, and farthest from that of C, the farthest object. The above is on the assumption always that the chart is correct, and that an unknown deviation is the only cause of the divergence of the bearings.

A useful practical way of obtaining the true position and the deviation is the following, which was used successfully aboard the *Massachusetts* in Newport Harbor, when cloudy weather and fog prevented azimuths. Three objects were observed by the standard compass. The bearings were then drawn on the chart. If they intersected in a point, the deviation on that heading was assumed as 0. If they did not, then the angles between the bearings were assumed as the correct angles between the objects (which they evidently were, the ship and compass being at rest), and these angles were then applied to the arms of a three-arm protractor, by which the true position was plotted. Lines were then drawn from the true position to the three objects. The angles at the objects should have been the same, that is, the deviation. If they were not the same the mean of the three was taken as the deviation.

The present apparatus is intended to accomplish all the above instantaneously, and whether the ship is at anchor or under way. Suppose a chart is fastened to a pivot-top table and turned until its meridian lies in the actual meridian. Then suppose three sight-vanes are pivoted on three objects as shown on this chart and are then sighted at the actual objects. If the chart is correct and truly in the meridian, the three sight-vanes will intersect in a point, which is the ship's position. If we could always get the chart in the actual meridian, two sight-vanes would be enough. The third

vane gives a practical means of accomplishing this object. On placing the chart somewhere near the meridian, the vanes will be observed to cross in a triangle instead of a point. Now turning the table-top slightly one way or the other, the triangle will grow larger or will grow smaller. The table-top is finally turned until the triangle reduces itself to a point. This is the ship's position, and may be dotted on the chart. A pointer on the edge of the table shows the ship's head with regard to the meridian. A comparison of this with the ship's head by compass gives the compass error; or, if the variation is known, then the deviation. This operation is instantaneous and may be made continuous.

The actual apparatus is three slotted sight-vanes with a perforated loose clamp pivot through the slots. Each vane has a small hole near the end which may be placed over a pin on the chart through one of the objects selected for bearings. The best form of pin is made like a thumb-tack, with the shaft extending through the head of the tack. The lower end of the shaft is pointed and is stuck through the chart into the top of the table, which should be of soft wood. The upper end becomes the pivot for the vane. The table-top is round and pivoted on ball bearings. The edge is graduated in degrees like the compass. There is a pointer that shows the ship's head, or fore-and-aft line.

The operation in use is as follows: The chart is fastened on the table with its meridian in the north and south line. Either the true meridian or the magnetic meridian may be used. Then three objects being selected for bearings, a pivot thumb-tack is placed on each one. The vanes are then placed on the pivots and an observer for each vane sights his vane on the object. The vanes slide on the loose clamp pivot, which preserves the common intersection, and the table turns automatically until the meridian of the chart lies in the actual meridian. The degrees as read from the edge of the table give the course (true or magnetic), and when compared with the compass give the error (or deviation). When the observers are all on, one of them calls "mark," the table and vanes are left at rest, the ship's head is noted by compass and by table, and the ship's position is dotted through the center of the clamp pivot. Or a tracer pencil may be fitted through the center of the clamp pivot which will thus trace the course. The true course may be read at any time from the edge of the table independent of the compass.

The apparatus has worked very satisfactorily aboard the *Chattanooga*. The results when using an accurate chart and a compass with a known deviation, have come out within a degree or a half-degree. It is quite interesting to watch the table settling itself to the course without apparent assistance. The observers simply keep their sights on, and what effort they use in so doing turns the table to the correct heading.

The photograph shows the apparatus in use. There are three observers, and a fourth stands ready to read the compass, or dot the position through the center of the clamp. The present apparatus was made aboard ship and is much heavier than necessary. By using a stiff bronze, and having the work done by an instrument-maker, the apparatus could be made materially lighter, and hence would take much less room on the chart. The lighter and smaller the parts, the less interference of pivots, and hence a wider range of application. This is a matter of mechanical detail.

A number of uses suggest themselves. Finding the compass error has already been mentioned. It would also be useful in obtaining tactical data. In pilot waters, if the chart and compass are both reasonably accurate, the board can be kept to the ship's head from the compass, one vane may be dispensed with, thus giving more space and range, and the ship's course may be traced continuously from the other two vanes. It would then be a matter of watching the ship trace her course on the chart. The apparatus would find a wide field in the running of lines of soundings, as the lines could be kept continuously, even without ranges. For boat work the water would have to be smooth, but for ship work this would not so much matter. These and other uses that will readily suggest themselves would warrant adding this apparatus to the navigator's outfit.

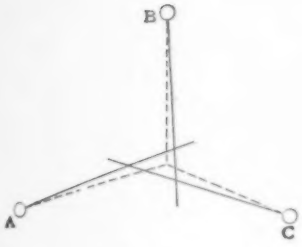


FIG. 1.

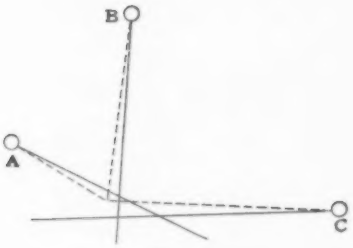
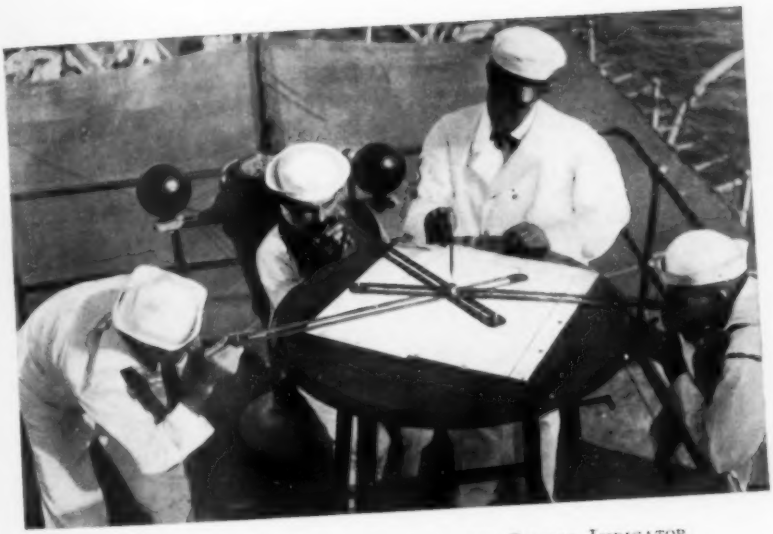


FIG. 2.



INSTANTANEOUS POSITION PLOTTER AND COURSE INDICATOR.

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

THE FIRING INTERVAL.

By PROFESSOR PHILIP R. ALGER, U. S. Navy.

In order that the target may be hit, the gun must be correctly pointed at the instant the projectile leaves the muzzle. But there is an interval, commonly called *the firing interval,* between the moment of willing to fire and the moment of exit of the projectile. Therefore, unless the line of sight can be kept continuously on the target, an allowance must be made by willing to fire when the gun is off the target and coming on to it at such a rate as to be on when the projectile makes its exit. As continuous aim cannot be accomplished at present, at least with large guns, it is a question of great interest to determine the value of the firing interval and to ascertain its causes, with a view to reducing it and making it uniform as far as possible.

Analysis of the firing interval shows it to be made up of four independent parts, as follows:

(a) The time from willing to fire until the firing device is actuated. We shall call this *the personal interval.*

(b) The time from actuation of the firing device until the primer flame reaches the ignition charge. This we shall call *the primer interval.*

(c) The time from the beginning of ignition until the projectile begins to move. This is *the powder interval.*

(d) The time from the beginning of motion of the projectile until the latter reaches the muzzle. This is *the travel interval.*

The personal interval depends upon the individual and upon the instrument he uses to explode the primer. For any one person, using any particular type of firing mechanism, and after a little practice, it is practically constant, but it varies considerably with different individuals and with different mechanisms.

The following is an account of experiments made at the Tor-

pedo Station in 1902, under the direction of (then) Lieut.-Commander F. F. Fletcher, U. S. Navy, to determine the value of this interval.

EXPERIMENTS TO DETERMINE THE TIME REQUIRED BY A GUN POINTER TO EXECUTE THE ORDER "FIRE."

The experiments consisted of measuring, by a chronograph, the time which elapsed between the impression given to the brain of the gun pointer to fire and the completion of the muscular action required to operate the firing device. The signal to fire was made by a sounding key, which gave a record on the chronograph. The completion of the order to fire was recorded by the closing of the circuit of the electric firing key or by the firing pin striking the primer. The sounding key and the operator giving the signals on it were not visible to the gun pointer, and the orders to fire were made at irregular intervals of time, so that he had no means of anticipating them or of making any correction of his firing interval by anticipating the signals. With each device the gun pointer was given ten tests, the mean of which only is recorded in the table. Over 600 tests were made with other men, but as their records were not complete with all the devices, and as the results do not differ from those recorded, they are not given.

THE PERSONAL INTERVAL WITH DIFFERENT MODES OF FIRING.

Method of firing.	Service hand key.	Self cocking pistol grip.	Mouth-piece biting.	Mouth-piece blowing with lungs.	Lanyard hammer.	Lanyard spring lock.	Foot.	Pistol trigger pull.	Mouth-piece blowing with mouth.
Name. *Rate.*									
1. E. Stoker, Ch. Gr. Mate	.283	.376	.206	.342	.453	.411	.432	.209	.220
2. D. P. Henderson, Gr. Mt. 1 cl.	.281	.317	.220	.304	.387	.370	.337	.260	.220
3. —— Cook, Ch. Gr. Mt. (Col.)	.184	.263	.138	.337	.320	.239	.274	.....	.....
4. G. Wheeler, Seaman (Col.)	.259	.328	.246	.257	.343	.263	.262	.200	.230
5. J. W. Daly, Seaman	.218	.310	.153	.242	.347	.244	.244	.....	.....
6. H. J. Kingman, Seaman	.230	.314	.190	.221	.303	.223	.....	.243	.192
7. W. Mahn, Seaman	.200	.217	.199	.284	.347	.270	.273	.212	.250
8. J. J. Jordan, Electrician	.205	.290	.153	.212	.301	.176	.211	.190	.170
9. F. F. Fletcher, Lt. Comdr. U.S.N.	.250	.285	.180	.287	.382	.220	.274	.....	.....
10. R. W. Henderson, Lt. U.S.N.	.....	.....	.....	.....	.....	.....	.....	.191	.170
11. G. Diemer, Seaman (Under instruction, Torpedo Station.)								.234	.212
12. H. McEroy, "								.275	.204
13. W. A. Shaw, "								.255	.210
14. J. C. Webster, "								.207	.242
15. W. J. Diercks, "								.243	.270
16. C. L. Bridges, "								.200	.187
17. A. Schliesser, "								.214	.208
18. M. McDonald, "								.182	.204
Average interval	.234	.300	.198	.276	.354	.268	.288	.244	.214
Maximum variation	.099	.159	.093	.130	.152	.235	.121	.068	.100
Variation from average +	.049	.076	.048	.086	.099	.143	.144	.051	.056
Variation from average −	.050	.083	.045	.064	.053	.092	.077	.042	.044

SUMMARY OF AVERAGE INTERVALS.

Biting key	.198	Mouth-piece blowing with lungs	.276
Mouth-piece, No. 2, puff from mouth	.214	Foot firing key	.288
Service hand key	.234	Pistol grip, self-cocking	.300
Pistol trigger pull	.244	Lanyard hammer	.354
Lanyard spring lock	.268		

An examination of these results shows that the minimum firing interval is obtained with a mouth-piece by biting or by a puff of air from the cheeks. Next in order come the service hand key and the pistol grip with a trigger pull, which differ only about 1/100 of a second. A lanyard pull operating the service spring lock is 3/100 of a second behind the service hand key and 30 per cent slower than a mouth-piece. A firing key operated by a movement of the foot requires 29/100 of a second and a lanyard pull operating the hammer lock used on smooth bore guns requires 35/100 of a second, or about 50 per cent more time than the service hand key.

The records show that all the men agree fairly well as to the relative time of the firing interval with the different devices. Thus the biting required a less interval in every case than any other device.

In reference to the muscular movement operating a device the rapidity was about in the following order:

Movement of the teeth, biting.
" " " cheeks, puff of air.
" " " hand, pressure on firing key.
" " " finger, trigger pull.
" " " forearm, lanyard pull.
" " " lungs, blowing.
" " " foot, pressure on firing key.

As to the regularity of the firing interval, the variation in the time with the different devices is about in proportion to the total time required. The service hand key, the pistol grip and a mouth-piece, either biting or blowing, are about equally uniform in their action and superior to the other methods tried.

An examination of the individual records shows that where the firing device gives a small firing interval it also gives a more uniform interval.

The board of officers which selected the present hand key for electrically firing a gun appear, from these experiments, to have selected about the most efficient device of the kind. The same board also considered the question of a mouth-piece, but this method was given no practical test, as the requirements of the gun pointer at that time did not suggest the necessity of such a device. Since then the idea has again been suggested, and under recent conditions, where a gun pointer can utilize both his hands in more efficiently keeping the gun trained on the target, it may be found that a mouth-piece can be used to advantage. If so, the form actuated by a light puff from the mouth is to be preferred, as with a biting key the gun pointer is apt to fire before he means to.

Another experimental determination of the *personal interval* was made at Indian Head in 1905, as a result of which it was reported by Lieut.-Commander A. C. Dieffenbach, then in command of the Proving Ground, that the time between the instant the pointer willed to fire and the instant he actually closed the electric firing key averaged .179 seconds for five men, the minimum time being .138 and the maximum .236 seconds.

It is believed that in this case the signal to fire was a visual one, which may account for the interval measuring less than in the case of the Torpedo Station experiments, where the signal was by sound.

Some years ago the writer proposed that gun pointers be taught to allow for the firing interval by snapping primers when the ship was rolling and learning to fire so that the line of sight came on the horizon (representing the water line of the target) at the same instant that the sound of the primer was heard. It then occurred to him that perhaps an appreciable time would elapse between the perception of the sound and that of the coincidence of the cross wire of the sight with the line of the horizon, in which case the method would be useless, and he therefore had the following experiment tried at the Torpedo Station:

A straight batten was marked so that from a distance of 20 feet one division represented 15′ of arc; this batten was placed in an upright guide and by a line attached to the batten and taken to a drum run by gearing at a steady certain speed the batten was moved vertically at a rate that represented the angular speed of the axis of a sight when a ship was rolling moderately. At a convenient height a horizon line was fixed on the guide and at this line a contact point was fixed. On the back of the batten at each division were holes for a movable contact strip, the two strips in contact closing a circuit in which was a telegraph relay. The apparatus was used as follows: The movable strip was fixed at some division (unknown to the person who was to fix the position of the batten at the time he heard the click), the drum was then started, moving the batten at a speed to represent an angular velocity of roll of 2° a second, and the man told to watch the divisions representing cross wires, with instructions to tell what division or part division was on the horizon when he heard the click representing the primer explosion. Without a single exception, the observer would see the line where the contact was made in exact coincidence with the horizon line, showing the time required to mentally note a sound and then fix the position of the cross wire to be negligible.

The primer interval depends principally upon the nature of the primer, though to some extent upon the length of the vent. With electric primers it also depends upon the strength of the current which heats the primer bridge.

Experiments made at Indian Head in 1904, using a chronoscope, gave .0438 second as the mean value of the interval between closing the firing key and the issuing of flame from the vent in a 6-inch gun, with service electric primers.

Further experiments, in 1908, using the Boulengé chronograph, gave .0714 second as the mean value for the same type of primer,

in an 8-inch gun. In this latter case the current used was that of three dry batteries, of service type, in series. In both cases the closing of the firing key marked the beginning of the interval and its end was marked by the breaking of a very fine copper wire across the mouth of the vent.

The corresponding time for the service percussion primer, measured with the Boulengé chronograph, was .0143 second in an 8-inch gun. In this case the firing lock was actuated by a lanyard, the tautening of which broke electric connection and so marked the beginning of the interval, the end being marked as before by the rupture of a fine wire across the mouth of the vent.

The powder interval depends principally upon the method of ignition. Presumably it decreases with increase of density of loading, and increases with increase of forcing of the projectile, but with any particular gun, with standard charge and projectile, giving standard muzzle velocity, its value depends upon the method of ignition, and may be anything from one or two hundredths of a second to nearly a second, according to whether the ignition is good or bad.[1]

The following table gives the results of firings in a 7-inch gun using various ignition charges. In this case the times were measured by chronoscope and were the intervals from the closing of the electric firing key to the exit of the projectile from the muzzle. They were therefore the sums of the *primer interval,* the *powder interval,* and the *travel interval.*

The *primer interval* having been determined, on the same occasion, to be .0438 second, and the *travel interval* being calculated at .0134 second, these times were subtracted from the measured times to give the *powder intervals* stated in the table.

We may conclude, therefore, that with efficient means of ignition the powder interval will not exceed two or three one-hundredths of a second.

It is of particular interest to note that neither the muzzle velocity nor maximum pressure were affected by such radical changes in the ignition. This is quite contrary to common opinion, but a little consideration will show its reasonableness. The projectile

[1] Even several minutes in some cases, but this probably is when the primer has set fire only to a part of the powder bag, which smolders for a while and finally sets fire to the powder. When the interval is perceptible to the senses, it is called a "hang-fire."

7-INCH 45-CALIBER GUN. CHARGE 65.5 LBS., IN TWO SECTIONS. SHELL, 165 LBS.

Character of ignition.	M. V.	Maximum pressure.	Powder interval.
	F. S.	Tons.	Second.
7 grains black prismatic in rear of each section. Total wt. of ig. charge, 1.26 lbs.	2687	14.8	.0122
	2694	15.2	.0086
	2713	14.5	.0200
	2707	15.1	.0340
	2658	14.6	.0191
3 grains black prismatic in rear of each section. Total wt. of ig. charge, 0.54 lb.	2670	14.5	.0009
	2670	14.1	.0408
	2683	14.6	.0287
	2683	14.4	.0330
	2672	14.3	.0419
1 grain black prismatic in rear of each section. Total wt. of ig. charge, 0.18 lb.	2691	14.2	.1209
	2694	14.9	.1340
	2677	14.2	.1127
	2670	14.4	.1330
	2648	14.1	.1286
A fiberloid* tube through center of rear section with 1 grain of black prismatic at each end of tube.	2687	14.8	.0665
	2643	13.9	.1972‡
	2670	14.3	.1713
Gun-cotton wisp† in front, rear, and through center of each section.	2705	14.7	.5571§
	2700	14.7	.7309§
	2687	14.5	.5902§
Fine black powder equal in wt. to 3 prismatic grains, in rear of each section. Total wt. of ig. charge, 0.54 lb.	2689	15.0	.0151
	2665	14.4	.0096
	2651	14.5	.0205
	2642	13.4	.0312
	2664	14.4	.0225
⅓ lb. fine black powder at each end of each section. Total wt. of ig. charge, 1.333 lbs.	2683	14.4	.0143
	2665	14.7	.0155
	2667	14.2	.0172
	2666	14.0	.0175
	2672	14.3	.0176

* A smokeless powder tube about 1″ in diameter.

† Nitrated lamp wicking in a spiral at each end of each section, the spirals connected through the center of the charge by a string of the same wicking.

‡ Perceptible hang-fire. § Very evident hang-fire.

MEAN RESULTS.

Character of ignition.	M. V.	Maximum pressure.	Powder interval.
	F. S.	Tons.	Second.
5.33 oz. fine powder each end of each section	2670	14.3	.0164
4.32 oz. fine powder at rear of each section	2662	14.3	.0198
7 prisms (10.08 oz.) at rear of each section	2692	14.9	.0242
3 prisms (4.32 oz.) at rear of each section	2675	14.6	.0423
1 prism (1.44 oz.) at rear of each section	2676	14.3	.1270
Fiberloid tube through rear section, with 1 prism (1.44 oz.) at each end of it	2666	14.3	.1850
Gun-cotton wisp at each end of each section and extending through center of charge	2696	14.6	.6291

cannot begin to move until sufficient pressure is developed in the powder chamber to overcome the resistance of the forcing; that is, until a pressure of about two tons per square inch exists. At such a pressure the temperature must be so high as to insure every portion of the powder charge being inflamed. The nature of the ignition merely determines how long it takes to attain this condition. With good ignition, all grains are about equally burned when the projectile begins to move; with poor ignition, some grains are considerably more burned than others; but when the projectile begins to move the part played by ignition is over and consequently ignition has no appreciable effect upon the form or dimensions of the powder pressure curve.

The travel interval for similar guns, similarly loaded, is proportional to the caliber. Its value for any given gun, with a given muzzle velocity, depends to some extent upon the character of the powder. From our knowledge of the general form of the time-velocity curve, however, we can be sure that the mean velocity is in the neighborhood of six-tenths the muzzle velocity, so that the travel interval is roughly equal to the travel of the projectile in the gun divided by six-tenths the muzzle velocity. For example, in the 7-inch gun, the travel being 21.5 feet and the muzzle velocity 2670 f. s., the travel interval is $\frac{21.5}{2670 \times .6} = .0134$ second. For a 12-inch 40-caliber gun with 2700 f. s. velocity, the travel interval would be found in the same way to be $\frac{32.5}{2700 \times .6}$ = .0200 second.

We may conclude, therefore, that the *firing interval*, which is the sum of the four intervals we have considered separately, is from 0.25 to 0.30 second under the best circumstances, using percussion primers, and several hundredths of a second greater when electric primers are used. And, in view of the less certainty of action of the electric primer, due to the electric connections, it may be questioned whether it is not advisable to abandon electric firing and use percussion firing only.

Should the objection be made that salvo firing is coming into use, and that only by electricity can a number of guns be fired simultaneously, the answer is that until continuous aiming has been *fully* accomplished it is not desirable to fire a number of guns *exactly* simultaneously. Were this done, some of the guns would certainly be off the target. What is practically a salvo can

be fired with much better effect by giving a signal and allowing each pointer whose gun is not exactly on at the instant to postpone his firing long enough to bring his gun on. In other words, under present conditions, percussion firing is just as suitable for salvo firing as electrical firing would be.

The only apparent advantage of electric firing is the readiness with which it lends itself to turret installation, where the firing position is remote from the breech of the gun. In such cases a percussion-firing mechanism might have so much lost motion as to give an excessive firing interval.

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

ON THE MEANING AND USE OF ENTROPY.

By Ass't Naval Constructor William McEntee, U. S. Navy.

The question of coal economy brought so prominently to the foreground by the cruise of the Atlantic Fleet to the Pacific Coast is one of vital importance and on that account the writer's excuse, if one be needed, for the following discussion of the fundamental principles on which considerations of economy are based in any system by means of which heat is made to do mechanical work.

The following quotation from "Notes," published in the Journal of the American Society of Naval Engineers for November, 1907, page 1035, is given because it expresses so well a new condition which has been brought about largely by the introduction of the steam turbine for marine use:

> There is one great feature about the adoption of marine turbines, which is that they have made naval architects and marine engineers think on new lines. Empirical methods of design and a discreet copying of the last similar job, sufficed for the vast majority of work done for the mercantile marine when the comparatively slow-running engine and propeller were adopted. In their case the margins were large in all directions; the propeller was generally nowhere near its breaking-down point, the link motion enabled a greater mean pressure to be used if the required power was more than the estimate, analyses of component losses were almost invariably ignored, and with one or two exceptions, shipbuilders were content to trust the indicator, and base everything thereon. Consequently vital variables remained undisturbed for want of investigation that the turbine has since enforced, and lest anyone should be unduly assisted by the work of his predecessors, providence seems to have carefully arranged that this casual satisfaction with indicated horsepower and speed should also extend to the stokehold, and that the coal consumption should be measured, while the water evaporated—and hence boiler efficiency as well—should be left undetermined.

Where formerly in the trials of vessels the question of economy was not closely gone into—the degree of success or

failure being judged solely by comparison of the speed attained with the contract or designed speed—there is now close measurement not only of the power but also of coal and steam consumption. By this means the economy of boilers and engines as a whole and of each separately is obtained. With these data the efficiency of the boilers and the engines can be computed and the effect of each on the whole efficiency determined. The efficiency of the boilers is simply the percentage of the thermal units contained in the fuel which are transferred to the water and steam in the boiler. When the efficiency of the engine is considered it does not appear to be nearly so simple a thing to determine. At first thought it might appear that the proper measure of efficiency of the engine would be the percentage of thermal units delivered to the engine which are converted and delivered at the main shaft in the form of work. For similar conditions this method can be used for comparison of economies of different engines. The conditions as to pressure, vacuum, quality, and superheat are rarely identical in any two tests, so that this manner of measuring efficiency can not be used to advantage.

Perhaps a more potent reason against this method is that it in a way charges the engine with thermal units which because of natural limitations the engine could not convert into work even if it were perfect in every respect; that is, a perfect engine would have an efficiency in the neighborhood of .25 or .30, whereas it should be unity. Again, the same absolute number of thermal units may be contained in a pound of steam under such different conditions that in one case there would be a greater part of them available for conversion into work. The engine that got the steam which is least easily converted would naturally show a lower efficiency than an exactly similar engine supplied with the same number of thermal units per pound of steam under better conditions.

The best and fairest method of measuring efficiency of an engine is the percentage of *available* thermal units which are converted into work. This is the method adopted by Parsons, Professor Rateau and other leaders in the development of the steam turbine. It is also followed in an article on the "Test of a Curtis Marine Turbine," by Ensign W. G. Diman, U. S. N., in the Journal of the American Society of Naval Engineers for February, 1906.

In order to learn the portion of heat in a pound of steam which is available for conversion into work they make use of a term "entropy." The question here naturally arises, What is entropy?

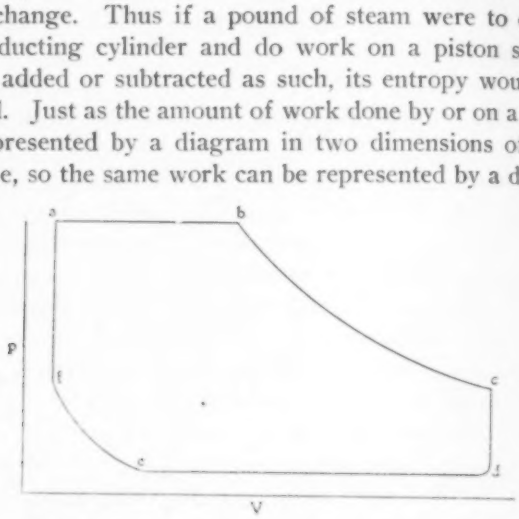
Of all the terms used in natural science it is probably the most difficult to define. Though it can readily be expressed in a mathematical form it is difficult to isolate, as it were, from mathematics so that a clear conception of it as a thing apart,—by itself,—can be had by those who wish to view and understand it without their aid. It is not a property of matter in the sense that mass or color is, for instance. It is not a quantity which can be measured in terms of the fundamental units of mass, time, and space alone. It is in fact a variable property of matter which measures not length, nor breadth, nor volume, but energy. It needs for this purpose, however, another variable property—temperature. Just as the energy in a pound of a certain substance can not be expressed by stating its temperature alone, neither can it be expressed by stating its entropy alone. The two combined, though, definitely fix the relative amount or state of energy in a given mass independent of its other properties or dimensions.

Though for the same substance under the same conditions it varies directly with mass, it differs in different substances independently of mass. It is in a certain respect the conjugate of temperature and resembles it in a manner. The difficulty of defining and of forming a true conception of it is undoubtedly due to the fact that though it is a property it can not be made apparent to the senses like temperature, pressure, volume, voltage, electrical current, light, velocity, or gravity. There is no instrument by which it can be measured directly. Though it is real it remains to the perception abstract.

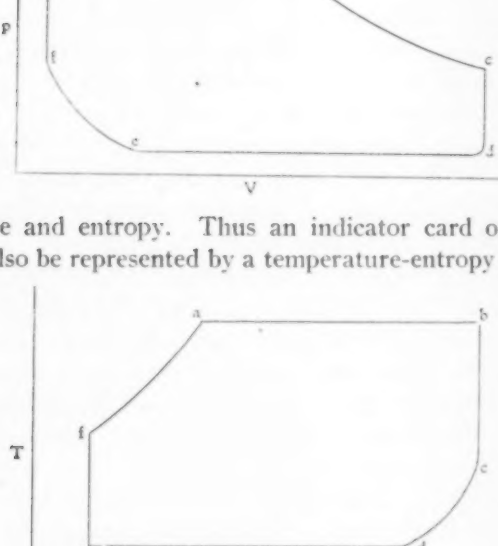
That so elusive and intangible, and yet so important, a property should be discovered and measured must always remain a lasting monument to the genius of Sadi Carnot. His achievement in this respect is certainly as wonderful as the discovery of the planet Neptune by Adams and Leverrier, who computed the position of the planet first and observed it afterwards. They had however the satisfaction of seeing with their eyes that which they had discovered. It is thought by some that Carnot's discoveries in thermodynamics—or which might possibly better be termed the science of energy—have placed him in a class with Newton and that as the use and value of that branch of science

become more extensive and better recognized his right to that position will be more firmly established.

One of the most common definitions of entropy is that it is that property of a substance which remains constant during an adiabatic change. Thus if a pound of steam were to expand in a non-conducting cylinder and do work on a piston so that no heat were added or subtracted as such, its entropy would remain unchanged. Just as the amount of work done by or on a substance can be represented by a diagram in two dimensions of pressure and volume, so the same work can be represented by a diagram of



temperature and entropy. Thus an indicator card of the usual form can also be represented by a temperature-entropy diagram.



From cut-off at *b* to exhaust at *c* the entropy remains approximately constant and the temperature decreases, from *c* to *d* both decrease. From *d* to *e* the temperature is constant and the entropy decreases. From compression *e*, to admission, *f*, the entropy is approximately constant while the temperature increases. From *f* to *a* both increase.

A conception of the nature of entropy may be had in the following manner: Consider a certain volume of gas in an elastic gas-tight receptacle. It has certain known properties among which are volume, temperature, energy, density, pressure, mass, etc. All of these properties or conditions may be varied and heat may be added or subtracted without changing the mass. If the gas happens to be an explosive mixture it may be exploded and changed to another gas, a liquid, or a solid. Still if the containing walls are tight as regards the introduction or escape of matter the total mass in the receptacle must remain the same. Next consider that the walls of the receptacle are in addition perfectly non-conducting to heat. If we imagine that the gas has another property (at present unknown) which is changed only by the addition or subtraction of heat in a manner similar to that of mass, which can only be changed by the addition or subtraction of matter, there would then be *two* properties of the gas in the receptacle which would remain constant during any possible changes in its other properties. Such a second property of the gas does exist and it is termed "entropy."

So much for its meaning. Now let us take up the practical uses to which it may be put in connection with steam engines or turbines.

First, it serves to determine under any given working conditions the maximum amount of heat in a given quantity of steam which is *available* for possible conversion into work.

Secondly, it is used in steam turbine design to ascertain the velocity of steam under given conditions.

From the second law of thermodynamics may be deduced the equation $d\phi = \frac{dQ}{T}$ where $d\phi$ represents the change in entropy, dQ the amount of heat added or subtracted expressed in thermal units, and T the absolute temperature at which the change is made. Knowing by experiment the specific heat of water at various temperatures, the change in entropy of a pound of water as the temperature increases from that of freezing can be computed from the equation

$$\theta = \int_{T_o}^{T} \frac{c dt}{T}$$

This has been computed for various temperatures and is tabulated in steam tables as the "entropy of the liquid." If, after

water is heated to a certain temperature T, it is converted into steam at that temperature, the entropy is further increased by an amount $\frac{r}{T}$ where r is the latent heat of steam at that temperature. If only a percentage, x, is converted into steam, the increase would have been $\frac{xr}{T}$ instead. The general expression for the entropy of a pound of dry and saturated or of wet steam of quality x, is given by $\phi = \theta + \frac{xr}{T}$ where θ is, as stated before, the entropy of the liquid.

It is shown in the theory of thermodynamics that the maximum possible work is obtained from a working substance when it expands adiabatically,—that is, without change of entropy.

What is the maximum amount of work obtainable from a pound of dry and saturated steam expanding from a pressure of say 180 lbs. absolute to a vacuum of 3 lbs. absolute?

Let θ_1, r_1, T_1, x_1 be the entropy of liquid, latent heat, absolute temperature and quality of steam at 180 lbs. pressure, and θ_2, r_2, T_2, x_2, corresponding values at 3 lbs. pressure. Since the entropy is unchanged after expansion to a pressure of 3 lbs. absolute,

$$\theta_1 + \frac{r_1 x_1}{T_1} = \theta_2 + \frac{r_2 x_2}{T_2} \tag{1}$$

As the steam at 180 lbs. pressure is assumed to be dry and saturated, $x_1 = 1$.

Transposing (1)

$$\frac{r_2 x_2}{T_2} = \theta_1 - \theta_2 + \frac{r_1}{T_1} \tag{2}$$

or

$$x_2 = \frac{T_2}{r_2}\left(\theta_1 - \theta_2 + \frac{r_1}{T_1}\right) \tag{3}$$

From the last equation the quality x_2 of the steam after expansion may be found, as the values of all the quantities appearing in the right hand of the last equation may be obtained from steam tables. Having found x_2, the total number of B. T. U.'s which would remain in the steam after expansion may be computed. This amount subtracted from the total heat before expansion will give the B. T. U.'s which are available for doing work.

If this quantity be multiplied by the mechanical equivalent of

heat, 778, the available energy will be expressed in foot-pounds. To find the velocity of steam under such conditions, let U be the available B. T. U.'s. If no work is done during the expansion all the available heat energy is converted into kinetic energy, which gives the equation

(4) $\frac{1}{2}mV^2 = 778 \cdot U$ where m is mass and V velocity in foot-seconds of one pound of steam,

whence $V^2 = 64.4 \times 778 \cdot U$

(5) $V = 223\sqrt{U}.$

Having indicated the method it is interesting to carry out the computations in the above case.

From steam tables we have:

$p_1 = 180$	$p_2 = 3$
$\lambda_1 = 1195.7$	$\lambda_2 = 1125.1$
$T_1 = 833.7$	$T_2 = 602.3$
$r_1 = 850.3$	$r_2 = 1015.3$
$\theta_1 = .5319$	$\theta_2 = .2013$

In the above λ is the total heat in each case.

Substituting in equation (3),

$$x_2 = \frac{602.3}{1015.3}\left(.5319 - .2013 + \frac{850.3}{833.7}\right) = .802$$

The total heat remaining after expansion will be

$$x_2 r_2 + q_2 = 1015.3 \times .802 + 109.8 = 923.7$$

where q_2 is the heat of the liquid, obtained also from the steam tables.

$$\lambda_1 - 923.7 = 1195.7 - 923.7 = 272 \text{ B. T. U.'s}$$

$$778 \times 272 = 2116.16 \text{ foot-lbs.}$$

From equation (5),

$$V = 223\sqrt{272} = 3510 \text{ f. s.}$$

The number of pounds of steam required under the above conditions per H. P. hour,—the way in which steam engine economy is usually expressed,—would be

$$\frac{33000 \times 60}{211616} = 9.36$$

Stated in other words, under the above conditions of pressure, vacuum, etc., the least possible amount of steam required per horse-power hour would be 9.36 lbs. If an actual engine were tested under these conditions and found to use but 12 lbs. of steam

per horse-power hour it would be considered to be a remarkably good performance. Its thermodynamic efficiency would be $\frac{9.36}{12} = 78$ per cent; that is, it would convert 78 per cent of the *available* heat energy into work.

If steam is superheated, another term is introduced into the equation (1) for entropy.

It is believed that it will be seen that the above discussion deals with a subject which is of more than academic or theoretical interest and value.

U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

THE EMPLOYMENT OF SUBMARINE MINES IN FUTURE NAVAL WARS.

Translation by PHILIP R. ALGER, U. S. N., from *Le Yacht.*

The Russo-Japanese war demonstrated in a striking fashion the danger of submarine mines. Each of the belligerents had sowed the approaches of Dalny and Port Arthur with these mines. The frightful losses that they caused to the two fleets, may be seen from the following list:

Russians.—Battleship *Petropavlosk,* sunk with all her crew; battleships *Pobieda* and *Sevastopol,* seriously damaged; armored cruiser *Bayan,* seriously damaged; cruiser *Boyarine,* sunk with her crew; mine ship *Yenissei,* sunk with her crew; gunboat *Gremiatsky,* sunk; gunboat *Bobr,* sunk; torpedo-boat destroyer *Vynoslow,* sunk.

Japanese.—Battleship *Hatsuse,* sunk; battleship *Yashima,* sunk; battleship *Asahi,* slightly injured; coast defence ships *Hei Yen* and *Sai Yen,* sunk; cruiser *Takasago,* sunk; cruiser *Akashi,* seriously injured; cruiser *Myako,* sunk; gunboat *Kaimon,* sunk; torpedo-boat destroyers *Hayatori* and *Akatuki,* sunk; torpedo-boats *38* and *48,* sunk.

Submarine mines strike friends and foes indiscriminately. It is impossible to say whether certain of the disasters above enumerated were caused by the Russian mines or by those of the Japanese. The Russian mine-carrying ship *Yenissei,* moreover, sunk herself while planting a torpedo off Dalny.

Finally, the terrible effects of submarine mines are not confined to the belligerents alone; mines gone adrift in the Yellow Sea, either because they had been badly moored or because storms had displaced them, destroyed several merchant steamers belonging to neutrals.

As a result of this war, submarine mines have assumed a very important place in the considerations of various navies. Preparations for a warfare of mines have at once been begun; ships for planting mines are demanded.

As regards this latter point, there are two schools. Some convert old cruisers for this use: the English have taken the protected cruisers *Iphigenia, Latona* and *Thetis* (3600 tons, 18 knots), which can carry 100 mines, it seems; their batteries have been reduced to one 6-inch and four 4-inch guns (instead of two 6-inch and six 4-inch). The Americans have similarly converted the cruisers of *Baltimore* type (4500 tons, 20 knots). In France the cruisers of *Du Chayla* type (4000 tons, 20 knots) are being fitted for this purpose. In Italy the small cruisers *Partenope* and *Tripoli* (800 tons, 18 knots); these can each carry 60 mines, in spite of their small size; they are placed along each side, on platforms projecting outboard, from which they can be put overboard rapidly.

In Germany, on the other hand, specially designed vessels have been built for this use. The German Navy already had the *Pelikan,* of 2360 tons and 15 knots, launched in 1890. Two others were begun in 1905 and 1906, the *Nautilus* and *Albatross,* launched respectively in August, 1906 and October, 1907. They are of 1970 tons and 20 knots' speed, and carry eight 3.5-inch guns.

Thus all the important navies are equipping themselves for mine warfare.

The Hague Conference, moved by the dangers that these blind engines of destruction make neutrals incur, made an effort to limit their use and to impose restrictions, as well as certain requirements of design.

The project presented by the third committee on this subject had ten articles. Its object was to limit the use of mines. These engines must become harmless within one hour after detachment from their places of mooring. The right to place mines was restricted to a zone of only 10 miles width along the coast.

This project was accepted in full meeting, but with reservations on the part of Germany, Spain, France, Russia and several small powers.

The German proposition, set forth by Admiral Siegel and Baron Marshall, allows great freedom in the use of mines, *even*

outside of territorial waters. It was strongly opposed by the English delegates, who called attention to the fact that, with this principle, navigation might become wholly impossible in narrow seas. Veritable blockades might thus be established, contrary to the Treaty of Paris of 1856, according to which a blockade is only legitimate when it is made effective by ships.

As a matter of fact, it may be said that the Hague Conference will not prevent in this matter belligerents from acting according to the ideas that they already have in mind and the plans that their General Staffs are secretly elaborating. Furthermore, let us see what experts are saying on this subject: Commander Daveluy, in his fine book *La lutte pour l'Empire de la Mer,* expresses himself as follows:

Credulous people have been able to believe that it was forbidden to plant torpedoes outside of the territorial waters of the belligerent nations. But in this respect as in many others, the Russians and Japanese paid very little attention to neutrals and demonstrated, once again, that the would-be international law was a fiction.

It is impossible to hope that automatic torpedoes or mines will disappear, for the nation which should decide to suppress them, upon the ground of their danger, would deprive itself of a redoubtable means of causing losses to the enemy.

An article from the German journal *Ueberall* gives the view of this very important subject that is held beyond the Rhine. We think it a duty to quote its principal passages.

Let us take the case of a war between England and Germany. A comparison of existing forces shows that it is impossible for us to sustain a struggle on the high seas. Therefore, command of the North Sea and of its approaches will belong to the enemy, and our maritime commerce will be destroyed.

Whatever opinion one may hold regarding the progress of a naval war between Germany and England, the foregoing is a fact mournful but beyond dispute.

This destruction of our maritime commerce represents for us a loss of several milliards caused by the enemy without any loss to himself.

Moreover, very soon after the opening of hostilities, the enemy, master of the sea, could threaten our coasts. Our fortifications are defective. To improve them would be useful, but would have no other effect than to hinder certain operations on the part of the enemy.

Our best defence is to sow thousands of submarine mines on our coasts and in the narrows of the Baltic Sea, which will thus be made untenable for the enemy. We ought to take no account of the ancient idea of the zone of territorial waters limited to a few miles width from the coast. That is a fiction kept up only by the English and in their own interest.

England has a commerce solely maritime. Its interruption would have disastrous consequences for her. From that standpoint, it is quite natural that the English government should wish, by all possible means, to establish an international agreement assuring freedom of maritime commerce during war.

We ought to oppose with all our force any limitation upon the use of submarine mines. We possess in them a powerful means of making war.

There have been energetic protests against mines, to the effect that they know neither friend nor foe, that they do not stay where they are placed, that they go adrift endangering neutrals sometimes very far from the theater of war.

That does not concern us. In case of war with England, we would have nothing more to lose on the high seas, and our interest, on the contrary, would be to set adrift a great number of mines at slackwater, taking advantage of the currents in a manner studied out beforehand.

Such things cannot be improvised; they must be carefully prepared in advance. It is necessary to have fixed the number of mines necessary, to have them in store all ready, to have gotten ready the desired number of cruisers with crews trained to place the mines rapidly.

We may feel sure that the German Navy is preparing methodically for these operations, and that in case of an English-German conflict submarine mines will play an important part.

Germany applies, on the sea as well as on land, the doctrines of Clausewitz: "*The overthrow of the adversary is the sole aim.*" No attention will be paid to neutrals and all possible means will be used to attain this ultimate objective.

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

TO ADJUST RANGE FINDERS BEFORE BATTLE.

By CAPTAIN BRADLEY A. FISKE, U. S. Navy.

Suppose an admiral has 16 ships, each of which has range finders on board, and that he is in the vicinity of the enemy and wishes to adjust the range finders before he engages in battle.

Let him direct the eight rear ships to form column abreast the eight leading ships at an interval of say 400 yards or more. The interval need not be exact as will be shown.

Let every ship have on board as "corrector" a substantial piece of steel on which are painted on a white background two vertical black lines about a foot high and about ¾" wide, at the exact distance apart of the base line of a range finder on the opposite ship. Let this corrector be held with its length perpendicular, or nearly so, to the bearing of that range finder. Various means suggest themselves for so holding the corrector.

When the range finder on the opposite ship is trained on this corrector, the rays of the light from the forward vertical line to the forward prism of the range finder will be exactly parallel to the rays of the light from the after vertical line to the after prism of the range finder. It is therefore merely necessary for the observer at the range finder to align the two images and adjust his scale to infinity.

It is apparent that this method is accurate. It is essentially the same method as the writer used for adjusting his electric range finders in fifteen ships.

It may be objected that the two vertical lines may not be placed exactly at the correct distance apart and that an error would thereby be introduced. The writer is willing to admit that, by reason of expansion due to temperature and other causes, the distance apart of the two lines might be incorrect by as much as 1/100 of an inch; but he sees no reason why the incorrectness should be greater than this.

Query—How much error would this cause in the reading of a

range finder, of say 54 inches base, in measuring a range of say 6000 yards?

Clearly the angle subtended by 54 inches at 6000 yards is the angle whose sine is

$$\frac{54}{6000 \times 3 \times 12} = \frac{54}{216{,}000} = \frac{1}{4000};$$

about 52 seconds of arc.

If an observer, in measuring the distance, makes an error of one per cent (60 yards), it is because he has, in making his contacts, measured an angle 1 per cent too great, or too little; that is, he has added or subtracted an angle whose sine is practically $\frac{1}{400{,}000}$; an angle of about half a second.

Now if the two ships are 400 yards apart, and the two vertical lines, instead of being 54 inches apart, are incorrectly placed by 1/100 of an inch, then this 1/100 of an inch subtends at 400 yards, an angle whose sine is

$$\frac{.01}{400 \times 3 \times 12} = \frac{1}{1 \times 1200 \times 1200} = \frac{1}{1{,}440{,}000};$$

an angle less than $\frac{1}{6}$ second. That is to say, if the ships are 400 yards apart and the two vertical lines are incorrectly placed by 1/100 of an inch, the error introduced will be less than 2/7 of 1 per cent at 6000 yards; that is less than 18 yards at 6000.

If the ships are 300 yards apart, then the error introduced would be an angle whose sine is

$$\frac{.01}{300 \times 3 \times 12} = \frac{1}{900 \times 1200} = \frac{1}{1{,}080{,}000},$$

an angle of about $\frac{1}{5}$ second, which would cause the error at 6000 yards of about $\frac{2}{5}$ of 1 per cent, or about 24 yards.

If the ships are 500 yards apart, the angular error introduced would be an angle whose sine equals

$$\frac{.01}{500 \times 3 \times 12} = \frac{1}{1500 \times 1200} = \frac{1}{1{,}800{,}000},$$

an angle of about 1/9 second, which would cause an error at 6000 yards of about 14 yards.

Clearly, the further the ships are apart, the less error is caused by incorrect placing of the vertical lines; clearly also, it is not necessary to know how far the ships are apart.

With due preparation and practice, this maneuver could be performed and the fleet got into column again in about 30 minutes.

Under circumstances such that so much time could not be spared, or so much slowing down permitted, the ships could remain in column and adjust their range finders on "correctors," placed conveniently in their neighbors ahead and astern.

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

TO FIND THE FLEET SPEED AND CORRESPONDING REVOLUTIONS.

By CAPTAIN BRADLEY A. FISKE, U. S. Navy.

Let the flagship throw over a flat board from abreast the foremast and make a preconcerted signal.

Simultaneously, let another ship, say the fourth ship, measure the distance from the foremast of the flagship with a range finder; there is no reason why the error in measuring this distance, about 1200 yards, should be greater than ½ of 1 per cent.

Simultaneously, let each ship in the fleet start a stop watch and begin to count the revolutions of the engines.

When the board gets abreast the range finder say of the fourth ship, let this make a preconcerted signal, let all ships stop the stop watches, and note how many revolutions were made during the interval, and what was the exact length of that interval.

If the fleet be going 10 knots, the interval in time will be about 3.6 minutes, that is 216 seconds. There seems no reason why a mistake should be made greater than 1 per cent in measuring the time.

Therefore, it would seem that this method would enable the admirals and captains to ascertain the speed at any time, and the corresponding revolutions, with an error not much greater than 1 per cent.

It may be objected that there is no need of ascertaining the fleet speed with such extreme accuracy, and that the patent log and speed curves supplied the ships give means of ascertaining the speed closely enough for practical purposes.

To this it may be answered that everybody knows that the patent log is far from accurate, and that the speed corresponding to any given number of revolutions varies with the degree of foul-

ness of the bottom, and the force and direction of the wind and sea. Furthermore, that, if we are to regulate the fleet speed by means of the revolutions of the engines, we may as well do it by an accurate method as by an inaccurate method; and to carry out the method herein suggested would cost practically nothing, would not take up the time of anybody not on duty, and could be done at any time.

DISCUSSION.

War on the Sea.

(See Nos. 125, 126, and 127.)

Commander John Hood, U. S. Navy.—In reading the March number of the Institute some time ago, in a very interesting article by Ensign Riggs on "The Question of Speed in Battleships," on page 237, I came across the following:

"In the battle of August 10, the Japanese concentrated on the *Cesarevitch*, and she is found after the battle with her speed reduced to but four knots, and her coal consumption so high that she was unable to get back to Port Arthur and had to be interned at Tsingtoa . . . .; a fine example of the unreliability of speed, and the danger it is subject to from concentration."

In the most interesting and instructive translation of Captain Gabriel Darrieus' "War on the Sea," I find, on page 460 of the June number of the Institute, the following:

"While the five battleships are going to Port Arthur, the *Cesarevitch*, almost wrecked and only able to make four knots' speed, proceeds at that tortoise gait to Kiao-Tcheou, and arrives there on the following evening without having been troubled otherwise than by a torpedo attack just as she left the field of battle."

The statements of the two writers as to the condition of the *Cesarevitch* after the battle of August 10 are practically identical.

The conclusion drawn from the statement by Mr. Riggs is an argument favoring his contention for greater power of offense and defense and less speed, the *Cesarevitch* being given as an illustration of the unreliability of speed under concentration of fire.

The conclusions drawn by Captain Darrieus from the same statement are arguments in favor of *his* contentions showing how little was to be feared from torpedoes, and how remiss the Japanese Admiral was in not taking full advantage of the opportunity offered by the supineness, not to say pusillanimity, of a disorganized enemy.

While agreeing very largely with the ideas of both writers in their general views, I happen to know that the statements of both writers in this case are in error, and founded on incorrect information; and, hence, the conclusions being drawn from wrong premises are erroneous. The ideas are correct, but the selection of the case of the *Cesarevitch* for illustration is unhappy.

Having been in a position to learn the exact truth about the condition of the *Cesarevitch* after the battle of August 10, it occurred to me after reading the two erroneous statements quoted above that it might be of interest to the readers of the Institute to hear it.

During the whole course of the Russo-Japanese war, until within two or three weeks of the Battle of Tsushima, I was in China, following the

course of the war as closely as possible. At the time of the battle of August 10—if my memory serves right—I was anchored off the city of Chin-Kiang.

A very few days after the battle and the interning of the *Cesarevitch* at Tsingtoa, a German cruiser arrived at Chin-Kiang, and on calling on her commander, I learned that he had come direct from Tsingtoa, and we naturally fell into conversation over the battle, and especially the *Cesarevitch* and its internment.

The German commander had been present when the *Cesarevitch* came in, had seen her enter the harbor and had been one of the officers in charge of her disarmament on internment, and was thoroughly conversant with her condition as to armament, ammunition, motive power, and everything else; and had left Tsingtoa for the Yangtse immediately on completing his duties in relation to the internment, so that everything was fresh in his mind.

To my various inquiries he informed me that in no particular or vital was the ship damaged in any way whatever, and that with any *will* to fight she was in a thorough condition to go into battle. Her motive power was not touched or damaged in the slightest, as was witnessed by her entering the harbor at a speed approaching 16 knots. Not a gun of her battery was damaged, and all were in working order had any one wished to fire them. On my stating that I had heard a rumor to the effect that the Russian ships were short of ammunition, and perhaps that had caused them to withdraw from the fight, he laughed, and stated that he had never seen a ship better supplied with ammunition, that he *knew*, for he had himself superintended its removal. He then went on to state that though the ship had been struck a number of times, the damage done by the Japanese fire was trivial, and that *no vital part* had been hurt. There were some holes in her smoke stacks, but that her speed in entering Tsingtoa proved that they did not interfere with her motive power. There were some holes in her upper works, but *every gun large and small* was intact. The one wound of any kind that need have been considered at all was a small hole on the starboard side forward, where a shell had pierced below her water line, and flooded a small pocket compartment, but that this was so small that her stability and flotation were not affected.

Such was the condition of the *Cesarevitch* as described by a highly trained and intelligent witness, who superintended her internment immediately after the battle, and she can hardly be said to be the poor four-knot wreck that the erroneous information of Mr. Riggs and Captain Darrieus has led them to believe; and the former will have to look for some other example to prove his contention rather than to the *Cesarevitch*, while the latter will probably find that the apparent lack of enterprise on the part of Togo in failing to push a victory home, as he later so signally did at Tsushima, came not from lack of enterprise, or from the effects or fear of Russian shells, but rather from damage done to the turrets of his own ships by his own defective material.

In fact, to use a slang expression, had the minds of the Russians on that famous day been as fixed on fighting as they were on running away, the poor Japs, with turrets out of commission on three of their four battleships, would have been "licked to a finish."

True Story of the America.

(SEE No. 126.)

SEABRIGHT, N. J., July 2, 1908.

Secretary and Treasurer, U. S. Naval Institute, Annapolis, Md.

DEAR SIR.—I herewith enclose copy of a letter I have received from Admiral Luce, in relation to my paper on the *America*. I was not aware that Captain Smith had previously found these letters, as I was given to understand that up to last winter, no satisfactory solution of the question had been reached. But it seems that Captain Smith communicated the letters to Admiral Luce in April, 1906, which was about 18 months before I saw them, for the first time, in Paris.

I hope you may find space to make note of the above fact in the next number of the PROCEEDINGS, and give to Captain Roy Smith the full credit that belongs to him.

One difference I note in the copy of the first letter communicated by Captain Smith; and this is in regard to the endorsement. I had much difficulty in making this out, as the writing was obscure, and not very legible. With the assistance of M. LeGrand, of the Archives Nationales, I finally came to the conclusion that it was "BM," but upon Captain Smith's copy it is written "BON" (the endorsement by the King Louis XVI.)

Very truly yours,

ROBERT W. NEESER.

15 FRANCIS STREET, NEWPORT, R. I., June 30, 1908.

MY DEAR MR. NEESER.—"The True Story of the *America*" settles the question of the fate of that ship. You have done well. When Captain Roy Smith, U. S. N., was in Paris as naval attache, he sent me the enclosed papers, one of which agrees with yours. I was too much engaged with other matters at the time to publish these letters, but am very glad that you have done so. That Captain Smith fished out these letters does not in the least deprive you of credit; but in any future article you may publish you might give him credit for what he did.

That the *America* should have proved so defective in so short a time I have always doubted. For the strength and durability of the ships of our early days was universally acknowledged. Our live oak was so durable that until quite recently we had ships still afloat that were built in the early part of last century. The *Constitution* and *Constellation* were notable examples, for although they have been rebuilt, their frames of live oak were like iron. They were built in 1797. However, the "Bon" (BM) memorandum seems to settle the last, so we may let her go at that.

Very truly yours,

(Sd) S. B. LUCE.

PROFESSIONAL NOTES.

Prepared by Professor PHILIP R. ALGER, U. S. Navy.

SHIPS OF WAR, BUDGETS, AND PERSONNEL.

AUSTRIA.

VESSELS BUILDING.

Name.	Displacement.	Where Building.	Remarks.
Battleships.			
Ersatz Tegethoff	14,500	Trieste.	Building.
Ersatz Kr.-Rudolf	14,500	"	"
Ersatz Kr.-Stephanie.....	14,500	"	"
Scout.			
Admiral Spaun	3,500	Pola	"

The three new first-class battleships, which are to take the place of the *Kronprinz Rudolf, Kronprinzessin Stephanie,* and the *Tegethoff,* are to be called the *Erzherzog Franz Ferdinand, Radetzky,* and *Zrinyi,* respectively. All three of them are to be built at Trieste, but it is stated that the last-named will not be laid down until after the launch of the *Radetzky.* Their dimensions will be as follows: Length, 430 feet; beam, 82 feet; displacement, 14,500 tons. The engines are to develop 20,000 I. H. P., to give a speed of 20 knots, and the ships are fitted with two rudders. The main belt is to be of 9-inch Krupp steel, the gun positions for the heavy guns, 10-inch K. S., and for the secondary armament 8-inch, with 6-inch transverse bulkheads and a 2-inch deck. The armament is to consist of four 12-inch, eight 9.4-inch, and twenty 3.9-inch guns. As the result of the lessons of the Russo-Japanese war, arrangements will be made by which the ships will preserve their equilibrium, if a compartment is filled by an explosion or collision, by the corresponding compartment on the other side filling simultaneously, so although brought lower in the water, the ship will remain on an even keel, and vulnerable parts will not be exposed to the enemy's fire. Cooling apparatus to keep the temperature below 76° Fahr. is also fitted to the magazines.

The new torpedo-cruiser to take the place of the *Zara* is to be called the *Admiral Spaun;* she has been laid down in the Imperial dockyard at Pola, and her dimensions will be as follows: Length, 411 feet; beam, 42 feet, with a displacement of 3500 tons. Her engines are to develop 20,000 I. H. P., to give a speed of 26 knots, and she is to have Yarrow water-tube boilers and Parsons' turbines.

The six new destroyers, which are building at Fiume, are to be named the *Durul, Csikos, Pandur, Reka, Belebit,* and *Dinara;* they are of the *Huszar* type, with a displacement of 384 tons, engines developing 6000 I. H. P., and a speed of 28 knots, while for armament they will carry one 12- and seven 3-pounders. The ten sea-going torpedo-boats, also building at Fiume, are to be called *Triton, Hydria, Skorpion, Phœnix, Krake, Polyp, Echse, Molch, Kormoran,* and *Alk;* they are vessels of 200 tons, with engines developing 3000 I. H. P., giving a speed of 26 knots; for armament they will carry four 3-pounders.

Several submarines are also under construction. Two are being built by Messrs. Vickers, at Barrow; two at the Krupp-Germania Yard at Kiel, which are to have a displacement of 300 tons; and four of the *Lake* type, two at Pola and two at Fiume. The *Lake* type are to have a displacement of 250 tons, when on the surface, with a length of 160 feet and a beam of 10 feet 6 inches; when submerged the speed is to be 7 knots, and on the

surface, 12 knots, with a radius of action, when submerged, of 25 knots. The air supply is for 12 consecutive hours. The engines are explosion-motors for use on the surface, and electric for use when submerged. The detachable ballast keel weighs 3 tons. Four of these six boats are to be ready by the end of the current year.—*United Service Institution.*

Two shallow-draft gunboats propelled by internal combustion engines have recently been constructed for the Austro-Hungarian government by Yarrow & Co. These little vessels were ordered by the government for special service on the river Danube. They are 60 feet long by 9 feet beam. The mean speeds obtained on the official trials, each vessel carrying a load of 3 tons, were 22.385 and 21.919 knots, respectively, during an hour's full speed run on the Admiralty measured mile on the river Thames. A consumption trial was afterwards made to ascertain the radius of action at a speed of about 11 knots, and it was found that petrol could be carried sufficient for a continuous run of 500 nautical miles. In this respect clearly the internal combustion engine far surpasses steam machinery, independently of the fact that the high speed obtained would be quite impracticable with any other class of machinery. These vessels carry a revolving gun-tower aft, on which is mounted a small gun. A mast and crow's nest is also fitted so as to fire from an elevated position. There is accommodation for five men. The entire machinery space and petrol tank, as well as the gun-tower and conning-tower, forward, are protected by 3/16-inch chrome steel armor plates proof against the Lee-Metford rifle at short range. These two vessels are very similar to the one which was constructed recently for the British Admiralty and which obtained a speed light of over 25 knots.

The Austrian government is about to build a new floating dock for the naval harbor of Pola. The dock is primarily intended for docking vessels of 18,000 tons displacement, which it will be able to do in four hours. The dock, however, will be capable of accommodating vessels up to 20,000 tons' displacement, docking the same in a correspondingly longer time. The overall length of the dock is 145.938 meters (480 feet); its breadth 42.73 meters (140 feet); its total height 18.862 meters (62 feet). When docking 18,000-ton ships, the dock is submerged 14.886 meters (48 feet 10 inches), whilst for 20,000-ton ships it must be submerged to a depth of 15.386 meters (50 feet 6 inches). The amount of water to be expelled when raising 18,000-ton and 20,000-ton ships is respectively 29,070 and 31,350 tons, and it is proposed to use eight vertical steam-driven centrifugal pumps for the purpose. The dock is to be ready for use at the beginning of 1910.—*United Service Gazette.*

BRAZIL.

VESSELS BUILDING.

Name.	Displacement.	Where Building.	Remarks.
Battleships.			
Minas Geraes	19,250	Elswick.	Launched Sept. 10, 1908.
Rio de Janeiro	19,250	"	Ordered.
San Paolo	19,250	Vickers.	Building.
Scouts.			
Bahia	3,500	Elswick.	Building.
Rio Grande	3,500	"	"

THE BUILDING PROGRAM.—According to the act passed on December 14, 1904, the following new ships were to have been constructed:

3 battleships of 13,000 tons.
3 armored cruisers of from 9200 to 9700 tons.
6 destroyers of 400 tons.
6 sea-going torpedo-boats of 130 tons.
6 torpedo-boats of 50 tons.
3 submarines.

1 transport capable of carrying 6000 tons of coal.
1 training-ship of 3000 tons.

This program, however, has been considerably modified:

The three battleships are to be of 19,250 tons, driven by turbine engines, which are to develop 26,000 I. H. P., and give a speed of 21 knots. Their length is to be 508 feet 5 inches, with a beam of 83 feet 6 inches, and they are to have a coal stowage of 2000 tons. The armament is to consist of twelve 12-inch guns, twenty-two 4.7-inch quick-firing guns, and eight 3-pounders. The 12-inch guns are distributed approximately as in the *Dreadnought*. The armor is to be 9-inch Krupp cemented.

Two of these ships, the *Minas Geraes* and the *Rio de Janeiro*, are being constructed by the Armstrong firm at Elswick, and the third, the *São Paulo*, by Messrs. Vickers, at Barrow. The turbine engines for all three ships are being constructed by Messrs. Vickers, and the ships are to be completed by the end of next year.

The three 9500-ton armored cruisers have not yet been commenced, but two protected scout-cruisers of 3500 tons' displacement are under construction at Elswick. They are to be fitted with Parsons' turbines, and the engines are to develop 18,000 I. H. P., giving a speed of 26 knots. They have been named the *Bahia* and the *Rio Grande*, and their armament is to consist of ten 4.7-inch quick-firing guns, eight 1.8-inch guns, and two above water torpedo-tubes.

The destroyers are ten in number, of 700 tons, similar to the latest type building for the British Navy.

There are ten sea-going torpedo-boats being built by Messrs. Yarrow; they are to have a displacement of 150 tons, a speed of 26 knots, and carry two 3-pounders with two torpedo-tubes for discharging 18-inch torpedoes. They will be driven by a combination of reciprocating engines and turbines. The *Goyaz*, the first of the ten, was completed at the end of last year and made a mean speed of 26.49 knots, on a three hours' full-speed run.

Five submarines are also being built; they are of the Holland type.

The budget for last year amounted to 50 millions of francs (£2,000,000). —*United Service Institution.*

The *Para*, the first of ten torpedo-boat destroyers for the Brazilian government, the construction of which has been entrusted to Yarrow & Co., has been launched.

The dimensions of the *Para* are: Length, 240 feet; beam, 23 feet 6 inches; fitted with two sets of triple expansion four-cylinder engines balance on the Yarrow, Schlick & Tweedy system, and two double-ended Yarrow boilers, each boiler being of about 4000 horsepower.

The *Para* is somewhat similar to the English *River* type of destroyer, but larger.

This launch is remarkable as being the first made from the new works of Messrs. Yarrow & Co. on the Clyde, and also the *Para* is the heaviest vessel ever launched by the firm.

FRANCE.

VESSELS BUILDING.

Name.	Displacement.	Where Building.	Remarks.
Battleships.			
Danton	18,350	Brest.	Building.
Mirabeau	18,350	Lorient.	"
Voltaire	18,350	Bordeaux.	"
Diderot	18,350	St. Nazaire.	"
Condorcet	18,350	"	"
Vergniaud	18,350	La Seyne.	"
Armored Cruisers.			
Ernest Rénan	13,644	St. Nazaire.	Under trial.
Jules Michelet	12,550	Lorient.	" "
Edgard Quinet	13,644	Brest.	Launched Sept. 21, 1907.
Waldeck-Rousseau	13,644	Lorient.	" Mar. 4, 1908.

The new first-class armored cruiser *Jules-Michelet* has made two preliminary full-power steam trials at Lorient, which have proved very successful. On the 4th ult. she made a four hours' run at normal full speed, when the engines developed 26,850 I. H. P. without difficulty; on the 6th ult. a further run was made at full speed under forced draft, when the engines developed 29,000 I. H. P., giving a speed of 23.2 knots, or more than a knot over the guaranteed contract speed, the consumption of coal per I. H. P. per hour not exceeding 860 grammes (1⅞ lbs.).—*United Service Institution.*

THE NEW SUBMERSIBLES OF THE "PLUVIÔSE" TYPE.—The construction and trials of the 18 submersibles of the *Pluviôse* type of 400 tons, the order for the building of which was given on August 26, 1905, is proceeding slowly. They have been designed by M. Laubeuf, Engineer-in-Chief of the navy.

Twelve of the vessels are being built at Cherbourg, and three each at Rochefort and Toulon. As yet only five have been launched:

Four at Cherbourg: *Pluviôse* (June 27, 1907); *Ventôse* (August 23, 1907); *Germinal* (December 7, 1907); *Floréal* (April 18, 1908).

One at Rochefort: *Papin* (June 4, 1908).—*United Service Institution.*

The *Pluviôse* and *Opale* have completed their trials with satisfaction. The first-named, which was to have a speed of 12 knots on the surface and 7.7 knots submerged, attained speeds of 12.3 knots and 8 knots. For the *Opale* the results were 11.6 knots and 9 knots. Apart from the slight failure in the rate of surface navigation, the expectations of the designers were practically realized. Further trials are to be conducted, for which plans are being prepared at Cherbourg, including long-distance navigation, interrupted by exercises with the vessels of the Northern Squadron or the coast-defence ships at Cherbourg. It is hoped to test the seagoing qualities of these boats, in one of which the hull is much like that of a destroyer, while in the other the boat lies low in the water and has a bridge raised high for the purposes of navigation. The *Pluviôse* and the *Opale* have approximately the same displacement, being about 400 tons. The *Opale* has Diesel motors, and the *Pluviôse* steam engines. When the latter boat was put in hand, being the first of 18, the naval department was under the influence of some poor results with Diesel engines, but in the successors of the *Pluviôse* engines of this type have been installed, and the steam engine abandoned practically for all the new submarines.—*Army and Navy Gazette.*

GERMANY.

VESSELS BUILDING.

Name.	Displacement.	Where Building.	Remarks.
Battleships			
Nassau	18,000	Wilhelmshaven.	Launched March 7, 1908.
Westfalen	18,000	Bremen.	" July 1, 1908.
Ersatz Württemberg	18,600	Stettin.	Building.
" Baden	18,600	Kiel.	"
" Oldenburg	18,600	Wilhelmshaven.	To be laid down in 1908.
" Beowulf	18,600	Bremen.	" " "
" Siegfried	18,600	Kiel.	" " "
Armored Cruisers.			
Gneisenau	11,600	Bremen.	Under trial.
Scharnhorst	11,600	Hamburg.	" "
Blücher	15,000	Kiel.	Launched April 11, 1908.
F.	17,000	Hamburg.	Building.
G	17,000	Kiel.	To be laid down in 1908.
Protected Cruisers.			
Emden	3,800	Kiel.	Launched May 27, 1908.
Dresden	3,800	Hamburg.	Launched Oct. 5, 1907.
Ersatz Greif	4,300	Danzig.	Building.
" Jagd	4,300	Stettin.	"
" Schwalbe	4,500	Kiel.	To be laid down in 1908.
" Sperber	4,500	"	" " "

The contracts for the 1908 German battleships have been awarded as follows: *Ersatz Beowulf* to Weser Bremen, *Ersatz Siegfried* to Kiel Yard, *Ersatz Oldenburg* to Wilhelmshaven Yard. Krupp's Germania Yard will build the large cruiser *G*.

The latest statement of the armament of the German battleships of the *Nassau* class is twelve 11-inch, twelve 6-inch. This is on the authority of a statement by the French Minister of Marine.

The orders for the 12 new destroyers of the 1907-8 program were recently given out. As at present arranged they are to be of 600 tons displacement and about 13,000 horsepower. A speed of 30 knots is to be guaranteed, but more is hoped for in view of the performance of *G 137*. All will be turbine-driven—four by Parsons' turbines, four by Melms and Pfenniger, three by Curtis, and one by Zoelly turbines.—*The Engineer.*

Ueberall does not regard with great satisfaction that period of German shipbuilding, which is ending. It has given Germany five *Braunschweigs* and five *Deutschlands*, which are good of their kind, but are not equal in displacement and qualities to the ships of other Powers, "especially England." The first three ships of the new period, which began in 1906, are launched, being the battleships *Nassau* and *Westfalen* and the armored cruiser *Blücher*. *Ueberall* reminds its readers that, although provision was made for these ships in the spring of 1906, they were not laid down until 12 months later. This was due to the plans not being ready and to the changes which had to be made in the building slips, one or more of them being retarded through the breaking of a dam at Wilhelmshaven. Meanwhile large quantities of material had been brought alongside the building slips, though how this was accomplished when the plans were not ready we do not quite understand, and rapid progress was made, the date of completion for the ships being put down by the new *Nauticus* for the autumn of 1909. *Ueberall* remarks that these circumstances promise a considerable degree of rapidity in the building of ships in coming years. The battleships are of about 18,000 tons and the cruiser of about 15,000. The new small cruisers *Dresden* and *Emden* are to be ready in 1908, and the 12 destroyers of 1906 were completed in January of the present year.

The battleships of the 1907 program, *Ersatz Baden* and *Ersatz Württemberg*, are still on the stocks, the first-named at the Germania Yard and the second at the Vulcan Yard, Stettin. They are sisters of the *Nassau* and *Westfalen*. It is possible, as we have pointed out, that these ships as well as the *Blücher* may be retarded by the strikes which are disturbing German shipbuilding establishments. The cruiser of the same year, *F*, which is building at Hamburg, will be much larger than the *Blücher*. She will be fitted with turbines, as will also the small cruisers *Ersatz Greif* (Schichau, Danzig) and *Ersatz Jagd* (Vulcan, Stettin). At the latter yard the 12 destroyers of the same year are in hand or have been completed. The vessels of the present year are the battlships *Ersatz Oldenburg* (Wilhelmshaven), *Ersatz Siegfried* (Howaldt, Kiel), and *Ersatz Beowulf* (Weser, Bremen). These ships are of a new class, and will differ in many points from the *Nassau*. The armored cruiser *G* will be built by Blohm & Voss at Hamburg, and the small cruisers *Ersatz Schwalbe* and *Ersatz Sperber*, respectively, at the Germania and Imperial Yards, Kiel, and both will be fitted with turbines, but perhaps of different systems. The same will be the case with the 12 destroyers, of which three will be built at the Vulcan establishment, four by Schichau, and five at the Germania Yard, Kiel. At the present time, building or completing, are seven battleships, three armored cruisers, and six small cruisers, being one battleship more than last year.—*Army and Navy Gazette.*

Ueberall informs us that the adoption of the Zölly turbine for the German small cruiser *Ersatz Schwalbe*, which is in hand at the Germania Yard, will furnish the Kaiser's navy with a third class of turbine. The *Lübeck*,

Stettin, *Dresden*, and *Ersatz Greif* have turbines of the Parsons' type, and the *Ersatz Jagd* turbines provided by the German General Electricity Company. The turbine has greatly increased the speed of the German small cruisers. From 1903 to 1905, 23 knots was the maximum, but since that time an advance has been made to 26 knots, which is expected to be reached by the vessel building to replace the *Sperber* and *Schwalbe*.—*Army and Navy Gazette.*

GREAT BRITAIN.

VESSELS BUILDING.

Name.	Displacement.	Where Building.	Remarks.
Battleships.			
Bellerophon	18,600	Portsmouth.	Launched July 27, 1907.
Téméraire	18,600	Devonport.	" Aug. 24, 1907.
Superb	18,600	Newcastle.	" Nov. 7, 1907.
St. Vincent	19,250	Portsmouth.	" Sept. 10, 1908.
Collingwood	19,250	Devonport.	Building.
Vanguard	19,250	Vickers.	"
Foudroyant	19,250	Portsmouth.	To be laid down in 1908.
Armored Cruisers.			
Defence	14,600	Pembroke.	Under trial.
Invincible	17,250	Newcastle.	" "
Inflexible	17,250	Clydebank.	" "
.....	17,250	Devonport.	To be laid down in 1908.
Cruisers.			
Boadicea	3,500	Pembroke.	Launched May 14, 1908.
Caractacus	3,350	"	Building.

The new battleship which is to be laid down at Portsmouth when the *St. Vincent* has left the building slip is, according to an unofficial statement, to be a greatly improved *St. Vincent*, and will cost about two millions and a quarter. The vessel will be named the *Foudroyant*, and will be completed within 18 months.—*Page's Weekly.*

The mounting of the 12-inch guns of the battleship *Téméraire*, now building at Devonport, was completed on July 29, and this coincided with the close of the ninth working month since the date of the launch. In that period practically the whole of the principal equipment and fittings have been placed on board, including, in addition to the armament, the machinery, boilers, funnels, armor masts, and their fire-control appliances.

An interesting innovation is being made in the battleship *Téméraire*, completing at Devonport Dockyard, by placing the bakery on the quarter-deck instead of between-decks forward, as in earlier ships provided with bakeries. The position selected in the *Téméraire* is immediately over the engine-room, and between the two after-barbettes. The bakery is triangular in shape, so as not to interfere with the extreme after-fire of the barbettes, and its location on the quarter-deck has doubtless been decided upon as being the most convenient for the ship's company, who will live aft, as in the *Dreadnought*.

The battleship *Collingwood*, now building at Devonport Dockyard, has been advanced to about 65 per cent of her launching weight. The amount of material built into the hull is approximately 4500 tons. It is expected that she will be launched in the first week of November.—*United Service Gazette.*

The *Boadicea*, just launched at Pembroke, is an unarmored cruiser of a new type. She has been designed as an improvement on the existing vessels of the *Scout* class, although like those vessels, she is intended to act as a "parent" ship for torpedo-boat destroyers. The scouts range in length from 360 feet to 374 feet, in breadth from 38 feet 3 inches to 40 feet, and in displacement from 2940 tons to 3000 tons. Their coal carrying capacity,

however, being limited to 150 tons renders it practically impossible for them to operate far from a base in which their bunker supplies can be replenished. This has been regarded as their most pronounced defect, and the *Boadicea* was designed to remedy it. Her principal dimensions are: Length between the perpendiculars, 385 feet; extreme breadth, 41 feet; mean load draft, 13 feet 6 inches; displacement, 3300 tons; coal-carrying capacity, about 400 tons. She has also been constructed to carry oil fuel, and her boiler installation will be provided with the accessories necessary for its most advantageous consumption. The radius of action of the *Boadicea* will, therefore, be much greater than that of the type of vessel she is intended to replace. She has been constructed on the same general lines as most modern warships, although the details of the structure of the hull involve some more or less important departures under the machinery spaces, which extend for about 180 feet in the central part. She has been framed on the combined transverse and longitudinal system, and has double bottoms, the intervening space which forms groups of cells, separated by water-tight divisions, at intervals, corresponding with the main divisional bulkheads in the interior of the ship, and being the part adapted for stowing the oil fuel. The machinery spaces are bounded laterally by bulkheads, which form an upward continuation of the second or outer longitudinal, and above by the lower deck, against which the lateral bulkheads terminate. The spaces between these latter bulkheads and the sides of the ship form the lower coal bunkers in the way of the boiler-rooms, three in number, which occupy the central part of the ship on both sides, in order, on the foreside of the foremost of the two engine-rooms, each of which, in order also, stretches from side to side of the ship throughout the entire length. Outside the double bottoms the ship is framed with Z-shaped angles, transversely stiffened, where necessary, by longitudinal girders. The *Boadicea* has been constructed on what might be called the "girder" principle. The thickest materials of the exterior have been worked in the middle part, both in the upper deck and in the plating of the sides and bottom. She will be fitted with turbine engines of 18,000 horsepower, and will have four propeller shafts, two of which—one on each side—will each have fitted to it one high-pressure and one cruising turbine. The other two shafts will be each fitted with an astern turbine. The main high-pressure turbines will make 500 revolutions per minute, and are expected to give the ship a speed of 25 knots per hour. The boiler installation will comprise eight Yarrow small-tube boilers, having a total of 40,000 square feet of heating surface, and working at a pressure of 235 pounds to the square inch, which will be reduced to 170 pounds to the square inch at the main turbines for full speed. The boilers and turbines are being supplied by Messrs. John Brown & Co., Clydebank, Glasgow, at a cost of £168,837, excluding some auxiliary machinery for which special contracts were made at a cost of £2625. The estimated cost of the hull of the ship, with its fittings and equipment, is £119,776, of which £73,986 is for dock-yard labor, £42,040 for materials, £2350 for contract work, and £1400 for steamboats. The ship will be equipped with five 4-inch quick-firing guns, one mounted on the forecastle and two on each side of the upper deck. She will carry two deck torpedo-tubes. The cost of the gun mountings and torpedo-tubes will be £6236, and the total cost of the ship, exclusive of guns and establishment charges, £302,489.—*Page's Weekly.*

The first of the "six fast protected cruisers" of the *Boadicea* type has been laid down at Pembroke. She will be named *Caractacus* * and all the sisters of the class will, it is rumored, bear ancient British names.

The *Caractacus* will be 385 feet long between perpendiculars; beam, 42 feet; mean draft, 13½ feet; displacement, 3350 tons. Turbines will, of

* *Le Yacht* states that the name of this cruiser has been changed to *Bellona.*

course, be fitted to her. The horsepower is 19,000 and the expected speed 25 knots. The armament will probably be six 4-inch, and the protection may be in the form of a thin belt amidships.

These cruisers are presumably "replies" to the German cruisers of the Stettin type, but unless they are very well protected for their class they will be distinctly inferior to the latest German small cruisers. The latest Stettins have a slightly higher designed speed, and each of the group carries a more powerful armament—ten against six 4-inch.—*The Engineer.*

THE SWIFT.—The question of warship speed has been occupying a good deal of attention lately, and general interest in the subject has been considerably quickened by the performance of the United States cruisers of the *Chester* class and of the British *Indomitable*. There have been many assertions made as to what ship is entitled to bear the distinction of being the fastest warship in the world; and although such discussions have as a rule been confined to vessels of good sea-going and sea-keeping qualities, the question in its wider bearings has been answered very emphatically by the British special-type torpedo-boat destroyer *Swift*. On her preliminary trials this vessel maintained for some hours a speed of 38.3 knots or nearly 45 miles an hour—higher by three knots than the best four-hour performance ever achieved; and by modifying the propellers it may be possible to get a higher speed out of her.

The *Swift* was laid down in October, 1906, at the works of Messrs. Cammell, Laird & Co. at Birkenhead, and was built to the designs of the builders, modified and improved by Sir Philip Watts, the director of British naval construction. Her displacement is exactly double that of the largest torpedo-boat destroyers previously built, namely, 1800 tons; while her length of 345 feet falls short by only 36 inches of the length of the 10,300-ton United States battleship *Indiana*. Her beam is 34 feet 2 inches—slightly less than one-tenth of length—and the mean draft is 10 feet 6 inches.

The *Swift* is, like all recent British ships, fitted with turbine engines on the Parsons principle, designed to develop the stupendous horsepower, for her size, of 30,000, and to give a speed of 36 knots. The turbines are in two compartments and drive four shafts with one propeller on each. The furnaces are fitted for the burning of oil fuel only, the carrying capacity being 180 tons; and it is the subject of considerable comment that this is no greater than the quantity carried by the 800-ton 33-knot destroyers of the *Tartar* class, which immediately preceded her. The armament of the *Swift* is limited to four 4-inch guns and two 18-inch torpedo-tubes.

After her speed, the most remarkable feature of the *Swift* is her cost. This amounts, in the case of the hull and machinery, to $1,237,310 and to $14,150 for the armament, a total of $1,251,460. This is a huge price to pay for a vessel of only 1800 tons and practically without any fighting power, and may be profitably compared with the figures given below for typical cruisers and similar war vessels in the British and in the United States navies.

The greater part of the cost of the *Swift* is, of course, absorbed by her speed; and in this connection it may be interesting to note that if the *Indomitable* had been designed for 23 knots instead of 25, it is estimated that she would have cost $1,500,000 less than she actually did; and that if the *Dreadnought* had been designed for 18.5 knots instead of 21, she would have cost $2,150,000 less. Since Great Britain has four *Indomitables* and eight *Dreadnoughts* built, building, or projected, the total saving would have been no less than $24,000,000—sufficient to build another three battleships.

It is not known whether the British Admiralty intend to repeat the *Swift*, but it is regarded as very improbable. At a time when it is so difficult to get money from the government for purposes of national defense, it is likely that the Admiralty will find some more substantial way of

spending money than in the creation of speeds which, however startling, have but a very limited military value.

Ship.	Type.	Displacement. (normal)	Speed. (nominal)	Armament.	Cost.
Swift (Br.)	Destroyer	1,800 tons	36 knots	Four 4-in.	$1,251,400
Adventure (Br.).....	Scout	2,940 tons	25 knots	Ten 3-in.	1,142,130
Amethyst (Br.).....	Cruiser	3,000 tons	23 knots	Twelve 4-in.	1,142,130
Chester (U. S.).....	Scout	3,750 tons	26 knots	Two 6-in. Six 3-in.	1,626,000*

*Exclusive of armament.

—*Scientific American.*

The five new ocean-going destroyers, *Nubian, Crusader, Maori, Zulu,* and *Viking,* ordered to be built by private contract, are each to have a displacement of 900 tons, which is slightly in excess of the 33-knot destroyers of the *Tribal* class now afloat, the *Saracen,* the largest of the class, having a displacement of 893 tons, and the *Afridi,* the smallest of the type, a displacement of 795 tons. The new destroyers will all be fitted with turbines, and will burn oil fuel.—*United Service Gazette.*

H. M. S. INDOMITABLE—A distinguished French writer has expressed the view that H. M. S. *Indomitable,* because of her high speed, in combination with great offensive power and the adequate thickness of armor, makes all existing cruisers obsolescent. This opinion, the accuracy of which can easily be established, is, however, based on somewhat exaggerated reports as to the speed attained on her recent official trials, for instead of the reputed 27 or 28 knots, the vessel can only be pronounced as easily able to maintain the 25 knots anticipated in the design. It is not considered desirable for patriotic reasons to give details of the trial results, but we may state that they were most satisfactory, both as regards speed attained and economy of steam consumption. It is therefore most fitting that this unique vessel—the first completed of four ships to form a separate cruiser class—should be commissioned to take the Prince of Wales to Canada for the forthcoming celebrations of the historical incidents at Quebec, which laid the foundation of the long and prosperous friendship between French Canadians and British Canadians.

The *Indomitable* is only a few weeks in advance of the *Inflexible* and *Invincible,* and shortly there will be laid down at Devonport the fourth of the class. They were originally designated as armored cruisers, but have since been regarded as fast line-of-battle ships, as no admiral would hesitate to place them in combat with battleships in line formation. Their offensive power and armor protection justify this, and the change in classification has disarmed much criticism regarding the somewhat remarkable combination of qualities which they possess, and which has excited the admiration of the writer in *Le Matin,* already quoted. Into the strategical and tactical questions associated with their inception it is not proposed here to enter; but a brief consideration of the elements in design may suggest that those responsible for their fighting efficiency have anticipated several requirements, especially when it is remembered that we shall in 1911 have four of these vessels to form a separate squadron.

The *Indomitable* is 530 feet long, with a maximum beam of 78 feet 6 inches, and at 26 feet draft she displaces 17,250 tons. She has a broad water-line belt of 7-inch armor, tapering to 4 inches at bow and stern. This is not carried to the upper deck, but the mountings of the twin 12-inch guns are protected by barbettes of 8-inch armor, while the gun mechanism is shielded by hoods of 7-inch armor.

These 12-inch guns, 45 calibers in length, each capable of developing an energy of 47,697 foot-tons, are placed at a much higher elevation than in earlier ships. There are two guns in a barbette at the forecastle level. Amidships, on the same level, there are two pairs of guns *en echelon*, the port guns being sufficiently forward of the after pair in the thwartship line to enable them to fire on either beam. The two guns aft are on the upper deck level, but the erections forward over this deck are cut away at an acute angle, to give these stern guns a considerable arc of training before the beam. It will thus be seen that all eight guns fire on either broadside, so that in this respect the *Indomitable* and her consorts are equal to the *Dreadnought* battleships. Six fire ahead and a corresponding number astern, equality being here also established with the 21-knot battleship. The secondary armament is also very formidable, consisting of a large number of 4-inch quick-firers.

The French writer compares these conditions of speed, armament, and protection with the French cruiser *Waldeck Rousseau*, the Japanese ship *Kurama*, and the American ship *Montana;* to his figures it is fair to add the displacement, and to give also the facts, as far as they can be ascertained, of the new German and Japanese cruisers.

	Displacement. Tons.	Speed. Knots.	Heavy Guns.	Main Armour Belt. Inches.
British—*Indomitable*	17,250	25	8 of 12-in.	7 to 4
French—*Waldeck Rousseau*	13,780	23	14 " 7.6-in.	6.7
German—*F* and *G*	17,000	25	10 " 11-in.	
Italian—*Pisa*	9,832	22½	4 " 10-in. 8 " 8-in.	8 to 3½
United States—*Montana*	14,500	22	4 " 10-in. 16 " 6-in.	5 " 3
Japan—*Kurama*	14,620	22	4 " 12-in. 8 " 6-in.	7 " 4
Japan (projected)	18,650	25	10 " 12-in.	7 " 4

It is always difficult to fully appraise the fighting value of a ship from these briefly-stated particulars. It is, however, significant that the projected ships of Germany and Japan follow the lines of the *Indomitable*, and that these ships are also to be driven by turbine machinery. As the French writer points out, the British cruiser would be able to force a fight upon the French, Japanese, and American-built ships; it can do this because of its greater offensive power, having eight guns of the largest caliber, and because of the greater thickness of armor it possesses. Its speed will enable it to keep at such a distance that its fire will be fully efficacious, while none of the others will be able to reach it.

Such is the power of the *Indomitable* that it can hold its own with most of the battleships in service, such as the French ship *Suffren*, which is provided with a belt of armor 300 millimeters thick at the water-line, but which, on the other hand, has only four large-caliber guns. The *Indomitable* could also engage a German battleship of the *Deutschland* type, and is probably superior to the British battleships *Duncan* and *Canopus*. The *Dreadnought* is the only battleship which could compel the *Indomitable* to retreat. The entrance into service of the *Indomitable* practically renders all our protected cruisers, including those which are not yet completed, obsolescent; not one of them would have the least chance of success in an action against her; owing to insufficient speed, not one of them could escape combat if it were to meet the *Indomitable*. In case of a naval battle, the French vessels would be useless against any fleet containing a fair proportion of *Indomitables*.

The *Indomitable* is fitted with Babcock and Wilcox boilers, using coal and oil as fuel, and a four-shaft arrangement of Parsons' turbines; but as

the machinery was fully described in our previous article, it is not necessary here to enter into details.—*Engineering.*

THE DESTROYER PROGRAM.—For some time past there has been considerable speculation as to the class of destroyer to be ordered under this year's program of the navy estimates. It is now an open secret that the Admiralty consider that the results obtained in the *Tribal* class have been purchased at too great a cost. A boat of this class costs just about double that of the preceding class, and it obviously requires very real advantages to be shown in order to justify so large an increase. Practically the only gain has been in speed, and as a set-off the radius of action is less than in the earlier 30-knot boats. If there were an unlimited amount of money available it would no doubt be a good policy to keep on building *Tribals*, or a modification of that type with a larger radius of action, but as the money aspect is the one which ultimately controls the policy, and as numbers are essential, it is inevitable, if we are to keep a sufficient number of destroyers available, that their size and cost shall be reduced.

The recent disasters involving the loss of the *Tiger* and *Gala* have brought home very clearly the risks involved in the operations of torpedo-boat destroyers even in times of peace, and suggests the question as to what will be the wastage of these vessels in time of war. In addition to the risk from the enemy's fire there is the additional daily internal risk inseparable from the working of machinery, in which the factor of safety has been reduced to the minimum, and this internal risk is likely to be much greater in the press and hurry of warfare than in the piping times of peace. We hear little of the minor mishaps to these boats which temporarily cause them to be out of action; but the liability to these slight internal complaints must be accepted as part of the game, and, indeed, it has hitherto been an accepted part of Admiralty policy to keep always a reserve of boats ready for commissioning, so that in the event of one being disabled the crew can turn over to a reserve boat and be at sea again in a few hours, and this has actually been done on several occasions. We believe that hitherto it has been considered necessary to have a total number of destroyers double that which it will be necessary to keep in commission in time of war, and in view of the risks, both internal and external, which these boats have to run, this does not seem too ample a proportion. Numbers, therefore, are a first essential, and the size of the boat must be cut to suit the money available, provided efficiency is not sacrificed. The question, therefore, which the Admiralty have to decide in the new design is—Can an efficient destroyer be designed more cheaply than the *Tribal* class? The answer, we think, is that it can, and evidently the Admiralty are of the same opinion, as from internal evidence on this year's estimates it looks as if the estimated cost of the new destroyers is to be £80,000. The size of the boat, then, may be roughly estimated as something between 600 and 700 tons, and, with the experience gained in the later vessels, it should be possible to attain a speed of 30 knots without unduly sacrificing fuel capacity or armament in favor of machinery. Such a boat might be looked upon as an improved *River* class rather than a reduced *Tribal* class. The former have earned a good reputation as good sea boats and good steamers, and in spite of their low trial trip speed they are in anything but smooth water the best boats we have in commission at present. It would seem, therefore, sound policy to proceed to an improvement of a type which has proved itself successful in service, rather than to go back from a type which, until it has been some time in commission, must still be regarded as somewhat experimental. The armament in the new boats ought to be brought up to modern ideas by fitting at least one 4-inch gun, and possibly three 12-pounders in addition. Such a boat would be somewhat better than the latest German destroyers, though nominally of less speed; but it is to be remembered that the Germans do not run their torpedo-craft at the sea-going displacement; and they have not hitherto paid the same

attention to sea-keeping qualities and armament that we have been in the habit of doing.

Whatever the other qualities it is essential for the present naval position that those of sea-worthiness and armament be maintained. If the center of gravity of naval activity is in the future to be in the North Sea our destroyers must be able to stand North Sea weather, and to be able to steam at a moderate rate of speed against the short nasty seas which are frequently experienced there in the winter months. Those who have been in the older 30-knot boats know that they are unequal to this work, and we ought to have a sufficiency of modern boats to replace them at the earliest possible moment. In the meantime the country has lost two destroyers within a fortnight, and the 16 new destroyers are not to be laid down till toward the end of this financial year. This is greatly to be deprecated, and the possibility of continuation of labor troubles is an additional motive for ordering these boats earlier, while the number ordered ought certainly to be increased by at least two.—*The Engineer.*

SALVAGE OF THE GLADIATOR.—One of the greatest engineering feats of the age is being attempted this week in connection with the salvage of the *Gladiator,* which sank in the Solent after colliding with the American liner *St. Paul.* Salvage operations have been proceeding day and night for over two months, and the attempt is now being made to tow the wreck bodily nearer the shore, so that when she is placed in an upright position again, her decks will only have a small depth of water over them. But the average man has no idea of the vast preparations which such an attempt demands. Steel cylinders, capable of lifting from a hundred to two hundred tons each, which have been constructed at Portsmouth Dockyard, have been sunk alongside the ship and fastened to her by means of wire cables secured round the vessel. The water in these cylinders will be expelled by compressed air, and a number of powerful air compressors have been placed in position for that purpose. On the shore enormous boilers have been placed in position to work capstans built into concrete foundations. Machinery powerful enough to haul loads up to 200 tons has been attached to the ship.

A number of small gunboats, carrying steam pumps, four salvage steamers, and numerous other craft are anchored near the wreck in Yarmouth Bay. Close to the wreck float several huge cylndrical pontoons, looking like enormous mooring buoys. At night, when the electric lights of the *Ranger* and the other salvage vessels are turned on the works, the scene in the bay is a particularly pretty one. In readiness for the attempt to move the vessel, all her guns have been removed, as well as the funnels, ventilators, and a great quantity of broken plating and other material. Steam-pump suctions have been fitted in all compartments, except the two central boiler spaces, where the damage is too extensive to permit of any pumping. The work, which has been carried out under the direction of Captain Fred Young, of the Liverpool Salvage Association, has been rendered extremely difficult, owing to the strong tides, which run at the spot at over six knots, and have only permitted the divers to work for a few hours out of the twenty-four. All hatchways and openings on the decks have been covered up, and the ship has been lightened of hundreds of tons of weight.—*United Service Gazette.*

The experience gained in the late war between Russia and Japan has led to the introduction of numerous modifications in the construction and equipment of the engine-room department of England's latest fighting ships, says the *United Service Gazette.* It was found, for instance, that during an engagement the exploding shell shattered the glass bulls'-eyes and scuttles that were in the skylights or bulkheads of the engine-room. This glass and other debris then found its way down into the engine-rooms, and became mixed up with parts of the engines, with the result that the

ships were often brought to a standstill or had their speeds seriously reduced. Glass has been as far as possible abolished, and fine-mesh armored gratings and other precautions introduced. Turbine engines will not in their nature be so open to injury from this cause as the reciprocating engines were.—*Nautical Gazette.*

During the next few months all the boom defences at home ports are to be tested. This was last done in May, 1905, and being somewhat of a novelty, attracted a good deal of attention. Many photographers, amateur and professional, will remember the occasion, for the fiat went forth that no photographs were to be taken, and the authorities destroyed the plates in all the cameras they could get hold of. But a good number of pictures were published, notwithstanding. Boom testing is a troublesome job. It involves a lot of labor, considerable interference with traffic, and is expensive. Consequently, the defence booms are not got out oftener than is deemed absolutely necessary.—*United Service Gazette.*

JUNIOR NAVAL OFFICERS' TRAINING.—No one who has followed with attention the various stages of the new scheme of naval training, the original Memorandum dealing with which was presented to both Houses of Parliament in 1902, can have been surprised by the issue of the recent Admiralty circular on the subject. In his original Memorandum, Lord Selborne said:

"Before the period arrives at which the first batch of cadets under the new system have to go to sea, the board will have considered very carefully and will have decided whether they shall be sent for the whole of the three years as midshipmen to battleships and cruisers, ordinarily commissioned, or whether the first part of this period shall be passed in specially commissioned training-ships. It is quite decided that at whatever period they are posted to ordinarily commissioned battleships and cruisers, compulsory school on board these ships shall cease."

It is with the stage of training here referred to that the circular now issued deals. Their lordships are of opinion that the time has arrived to define clearly the principles, and lay down the routine of the instruction of midshipmen under the new scheme during their three years' service at sea, and to issue a statement of the general lines of the examination which they will have to pass at the expiration of that period to qualify them for advancement to the rank of sub-lieutenant and subsequently to that of lieutenant. The principles as defined in the circular are practically the same as those which were set forth in Lord Selborne's Memorandum. The training must be such as will ensure that the officers as a whole will have a sufficient knowledge of all the duties which they will be called upon to undertake in the capacity of sub-lieutenant and lieutenant, while it must at the same time afford facilities for the higher education of such portion of them as will afterwards be required to specialize in gunnery, torpedo, engineering, and navigation. The main features of the scheme which has been prepared with this object in view are as follows:

1. The first period of five years is to be spent continuously at sea.

This shows that there was no intention of neglecting the sea training of the young officers, and should go far to answer the ignorant criticism of those who have maintained that the new scheme officers will not be seamen. Three years out of the five will be served in battleships or cruisers ordinarily commissioned, and after the examination for lieutenant two years more will be served at sea as sub-lieutenant or lieutenant, the length of time in each rank being dependent upon the classes taken in the examination.

2. The centralizing of the examination in seamanship.

This is a reform long called for. It will ensure uniformity of the standard and conditions of examination. It is notorious that under the past system there has been a larger element of luck in the seamanship examination than there ought to have been, and many a good "first" has been

lost by the caprice of the several examining boards. Now the examination in all subjects will be conducted on shore at Portsmouth three times a year on dates approximating to the completion of three years' service at sea as midshipman.

3. The abolition of the preliminary courses on shore at Greenwich prior to the examination for lieutenant.

This is a notable reform, and must earn the gratitude of all who have watched the progress of the junior officers with interest, and who have seen the evil effects of the sudden plunge from the strict discipline of the commissioned ship to the comparative liberty and license of the shore colleges. When a young man is 25 he can be trusted to spend his time on shore wisely—if he is worth anything at all. But youngsters of 19 and 20 are not conspicuous for their ballast, and Greenwich and Portsmouth have proved the downfall of many a promising acting sub-lieutenant who only needed a guiding hand to keep him straight and make him a good officer.

4. The postponement until after they have become lieutenants of the selection of officers for specialization.

This is the natural corollary of (1) and (3), and is calculated to ensure that every officer shall have had the opportunity to gain all-round experience in the practical side of his professional work before he is considered eligible for specialization.

5. The abolition of the present system of compulsory school on board commissioned ships for midshipmen.

This step was quite decided upon, as Lord Selborne stated, in 1902. It means that in future the training will be conducted mainly by naval officers in all branches of their duty. At the same time, until further experience is gained, naval instructors will continue to be appointed to ships carrying the new scheme midshipmen for the followng work:

(a) To superintend the observations and the working out of the ship's position every day at sea by those midshipmen who are not attached to the navigating officer; (b) to assist the specialist officers with the theoretical instruction of the midshipmen in the various professional subjects; (c) to encourage voluntary study, and to help the midshipmen who wish to keep up and improve their educational requirements; and (d) to assist any commissioned officers who desire to work up for specialization.

It is obvious that if the new scheme is to work well the early education of the young officers must be sound and thorough before they leave the training cruisers for their life in the regularly commissioned ships. Upon this phase of the subject Dr. Ewing, the director of naval education, has recently made a very encouraging report. As we have already stated, in reference to the passing out of the first term of cadets, Dr. Ewing was able to report that the remarks of the independent experts who conducted the examination went far to encourage the belief that the course of training is such as to bring out the boy's best powers. But he tells us further that the experience of four years has shown that it is practicable under the conditions obtaining at Osborne and Dartmouth to carry out the education of cadets in applied science much further than is usual with boys of the same age in other schools, and thus to lay a rational foundation for the professional knowledge they have still to acquire. The education given in the colleges has prepared the young officers to deal intelligently with practical matters. By the time they leave the cruisers their training in mathematics and science has been carried as far as is necessary for the ordinary naval officers who do not aim at expert knowledge of a single branch, while for the future specialist this early training will pave the way towards the more advanced study he will have to engage in later. During the three years before passing for lieutenant the midshipmen will work with the executive officers of the ship for training in officers' duties and in seamanship, and with the specialist officers for training and instruction. Generally the detailed appropriation of the midshipmen's time is left to the commanding officer of the ship to determine, with the proviso that about one-third of the whole time is to be spent with the engineer officer, and

that the periods are to be arranged so that the time devoted to any particular branch shall not be so long as to entail a risk of the youngsters getting out of touch with other branches of their professional work. Instruction is always to be imparted by officers, it is never to be delegated to seamen instructors. The annual examination of junior officers afloat is to be continued, and marks are to be awarded to indicate the young officer's professional qualities; that is to say, these marks are in no way to be influenced by his conduct, but are to represent his commanding officer's opinion of his efficiency as an officer in the actual performance of his practical duties.

The examination for lieutenant to take place at Portsmouth will consist of six parts, five of which are compulsory. These are seamanship, navigation and pilotage, engineering, gunnery, and torpedo, while the sixth will consist of the following voluntary subjects: Practical mathematics, mechanics and heat, advanced French, and other foreign languages, either German, Italian, Spanish, Russian, or Japanese, and naval history. The officers who take the sixth part must offer at least two of the voluntary subjects, and they may offer three. Having passed for lieutenant, the officers go to sea again for two years, one of which must be spent as a lieutenant in charge of a watch in a sea-going ship, and it is not until five years have thus been spent continuously at sea that those selected for specialists will go to Greenwich for special courses of six months to prepare for further examinations.

The clear statement made in this circular should go a long way to satisfy all but the captious and wilfully ignorant that the regulations for the new system have been framed, as the Admiralty claim, "so that those officers will duly qualify who confine themselves to the practical side of their professional work, while they offer special advantages to those who also take up the theoretical side." It is still to be understood, however, that so far as the details are concerned, the board is working by the light of experience, and these will remain subject to revision if such should be found necessary. A good practical training at sea for everyone, on a thorough groundwork of general education should, it is insisted upon, be the aim, and this, we believe, will be supported by the opinion of the navy.—*Army and Navy Gazette.*

In the House of Commons on July 30, Viscount Castlereagh asked the First Lord of the Admiralty whether any communication had been received at the Admiralty from the Commander-in-Chief of the Channel fleet with reference to a serious collision having been imminent between the *Good Hope* and the *Argyll* owing to an order given by the Commander-in-Chief of the Channel fleet. Mr. McKenna replied: "The board have had reported to them and have examined the positions of the fleet at the moment the signal referred to was made, and they are satisfied that the maneuver was not dangerous. At the same time the rear-admiral, as he thought there was risk in carrying out the order, was justified in turning the other way; and the Commander-in-Chief so informed hm by signal at the time."—*Army and Navy Gazette.*

ITALY.

VESSELS BUILDING.

Name.	Displacement.	Where Building.	Remarks.
Battleships.			
Roma	12,625	Gov't Yard, Spezia.	Launched Apr. 21, 1907.
Napoli	12,625	" " Naples.	" Sept. 10, 1908.
Vittorio Emanuele	12,625	" " Castellamare.	Under trial.
A.	19,000	" " "	Building.
B	19,000	.....	To be laid down in 1908.
Armored Cruisers.			
San Giorgio	10,200	Gov't Yard, Castellamare.	Launched July 27, 1908.
San Marco	10,200	" "	Building.
Pisa	10,200	Orlando Works.	Launched, Sept. 15, 1907.
Amalfi	10,200	Odero Works.	" May 5, 1908.
B	10,200	Leghorn.	Building.

Le Yacht states that the new Italian battleships *A* and *B* are to be armed with twelve 12-inch wire-wound guns of 46 calibers length, eighteen 4-inch guns and sixteen 3-inch guns. Ten of the 4-inch are to be mounted in the central armored casemate, and the other eight in four turrets. The 3-inch are to be mounted in the open.

JAPAN.

VESSELS BUILDING.

Name.	Displacement.	Where Building.	Remarks.
Battleships.			
Satsuma	19,200	Yokosuka.	Launched Nov. 15, 1906.
Aki	19,800	Kure.	" Apr. 15, 1907.
Huki	19,800	Yokosuka.	Building.
Armored Cruisers.			
Ibuki	14,600	Kure.	Launched Nov. 21, 1907.
Kurama	14,600	Yokosuka.	" Oct. 21, 1907.
Protected Cruiser.			
Tone	4,100	Sassebo.	" Oct. 24, 1907.

The Japanese marine budget for 1908-09 shows that the vessels launched in 1907 were: The battleship *Aki*, 19,800 tons, 27,000 horsepower, speed 22 knots; armored cruisers *Ibuki* and *Kurama*, each displacing 14,620 tons, of 25,000 horsepower, and 22½ knots speed; second-class cruiser *Tone*, 4100 tons, 6500 horsepower, making 23 knots; third-class cruisers *Yodo*, 1250 tons, 6500 horsepower, 22 knots; *Mogami*, 1350 tons, 8000 horsepower, 23 knots speed. There are also a number of destroyers. The personnel of the Japanese fleet in 1907 was: Active service, 42,407; reserve, 14,446; total, 56,858; besides 1016 civilian servants. The number of ships in the navy in 1907 was 141, of 451,648 tons displacement, besides 18 first-class, 36 second-class, and 29 third-class torpedo-boats. The first squadron consists of four cruisers, 24 destroyers; the second squadron of three coast-guard cruisers and four second- and third-class cruisers.—*United Service Gazette.*

Vickers' Sons & Maxim launched on Monday a steamer which is about 270 feet long, has a big beam, and which possesses huge hatchways. This vessel has been built to carry out two submarines to Japan, which this firm is building for the Japanese government. The system of loading is somewhat uncommon. The steamer will be submerged, and the submarines will be floated in. Then she will be pumped dry, the submarines made secure, and proceed on her voyage.—*Page's Weekly.*

JAPAN'S MARITIME POSITION.—From its ownership in 1885 of 0.23 per cent of the world's sailing fleets, Japan has taken her place among the nations of the world as tenth instead of seventeenth, and now owns 2.32 per cent of the world's sailing tonnage. With reference to steam tonnage, reckoned in net register tons, the share of Japan in 1885 was 0.88 per cent, while in 1907 it had grown to 3.33 per cent. In 1885 her rank in steam was fourteenth; now it is sixth.—*Nautical Gazette.*

According to Japanese press accounts the amended naval program is as follows:

Four 20,800-ton battleships of 20 knots' speed, armed with twelve 12-inch and eighteen 6-inch guns.

Five 18,500-ton armored cruisers of 25 knots' speed, armed with six 12-inch and fourteen 6-inch guns.

Two cruisers of 4800 tons and 26 knots.

Four destroyers of 790 tons and 26 knots.

The budget for 1908-09 amounts to 34,810,737 yens for ordinary and 46,138,124 yens for extraordinary expenses.

RUSSIA.

VESSELS BUILDING.

Name.	Displacement.	Where Building.	Remarks.
Battleships.			
Emperor Paul I.....	16,900	St. Petersburg.	Launched Sept. 7, 1907.
Andrei Pervozvannui.....	16,900	"	" Oct. 20, 1908.
Evstafi	12,500	Nicolaiev.	" Oct. 1908.
Ivan Zlatoust	12,500	Sevastopol.	" May 13, 1909.
Armored Cruisers.			
Bayan.....	7,800	St. Petersburg.	Launched Aug. 15, 1907.
Pallada	7,800	"	" Nov. 10, 1908.
Protected Cruiser.			
Outchakoff	6,750	Sevastopol.	Building.

Accurate information as to the Russian naval program seems difficult to obtain, but as far as can be ascertained no definite orders have yet been placed. The battleship designs remain as before, viz., 21,000 tons and 21 knots, but the length has been considerably increased over that of earlier designs. The general arrangement of armament remains the same. Tenders for all types of fast craft continue to be submitted; a scout of 28 knots' speed and 4300 tons, and a destroyer of 32 knots and 950 tons' displacement.—*The Engineer.*

UNITED STATES.

VESSELS BUILDING.

No.	Name.	Speed. Knots.	Where Building.	% of Completion Aug., 1908.
	Battleships.			
26	South Carolina.....	18.5	Wm. Cramp & Sons.	55.
27	Michigan	18.5	New York Shipbl'g Co.	60.4
28	Delaware.....	21	Newport News.	35.3
29	North Dakota.....	21	Fore River.	45.7

THE SOUTH CAROLINA.—On July 11, the second of the American "all big gun" battleships was launched by William Cramp & Sons, Philadelphia. This ship, which is a sister of the *Michigan*, launched in May, has a length of 450 feet on the water-line; a beam of 80 feet, molded; and a mean draft of 24 feet 6 inches. The displacement on this (trial) draft is 16,000 tons, while the full-load displacement is 17,617 tons. Propulsion is by means of two four-cylinder triple expansion engines driving twin screws. The cylinders measure 32, 52, 72, and 72 inches in diameter, with a stroke of 48 inches. Steam is furnished by 12 Babcock & Wilcox water-tube boilers at a pressure of 265 pounds to the square inch. These boilers have a total grate surface of 1050 square feet, and a heating surface of 47,220 square feet, the ratio being 45 to 1. The designed indicated horsepower is 16,500, corresponding with a trial speed of 18½ knots. The normal coal supply of 900 tons can be increased to a maximum of 2175 tons.

The main point of interest lies in the battery and its arrangement. There are eight 12-inch guns of 45 calibers, mounted in pairs in four turrets, all on the center line, the two inner turrets being raised above the end turrets, so that four guns may be fired forward, four aft, and the entire eight on either broadside. Each turret has an arc of fire of 270 degrees. The first and third turrets, counting from the bow, have their gun axes about 24 feet above the water-line. The second turret shows an axis of 32 feet above the line of flotation, while the after turret has its guns 16 feet above the water. The secondary battery includes twenty-two 3-inch guns; two 21-inch submerged torpedo-tubes, and fourteen automatic guns.

The water-line belt of armor extends from bow to stern. It is 8 feet wide, of which about 5 feet is below the normal water-line. The maximum

thickness is 11 inches, tapering to 9 inches at the bottom. Above this belt, and covering the side for about 300 feet, is an upper belt, 10 inches thick at the lower edge and 8 inches at the upper, with 10-inch bulkheads running across the ship at the ends. The barbettes for the turrets are 10 inches on the face and 8 inches in the rear, while the turrets themselves are 12 inches in front and 8 inches in the rear. A conning-tower 12 inches thick is fitted just aft of the second turret, and is provided with a 9-inch tube, protecting communications to the interior of the ship. The protective deck has a thickness on the slopes of 3 inches, and is 1½ inches thick forward.

The ships were authorized March 3, 1905, and contracts for construction were let in July, 1906. The keels were laid in December, 1906, and the contract calls for completion late in 1909. The contract price of hull and machinery for the *South Carolina* was $3,540,000 (£727,422), and for the *Michigan*, $3,585,000 (£736,670). In each case the cost of the completed vessel will be about $7,000,000 (£1,440,000).—*International Marine Engineering.*

NAMES FOR NEW DESTROYERS.—The torpedo-boat destroyers now under construction have been given the following names:

No. 17, building at the Cramp yard, the *Joseph B. Smith.* Lieutenant Smith commanded the *Congress* when she was sunk by the *Merrimac* on March 18, 1862, and was killed in that engagement.

No. 18, also building at the Cramp yard, the *Roswell H. Lamson.* Lieutenant Lamson took part in the battle of Port Royal and the capture of Fort Walker, and was commended by Rear-Admiral Dupont for bravery.

No. 19, building at the yard of the New York Shipbuilding Co., the *Samuel W. Preston.* Lieutenant Preston was killed in the assault on Fort Fisher, January 15, 1865.

No. 20, building at the Bath Iron Works, the *Chas. W. Flusser.* Commander Flusser was killed in action on the *Miami* in an engagement with the Confederate ram *Albemarle*, near Plymouth, N. C., on April 19, 1864.

No. 21, building at the Bath Iron Works, the *Samuel C. Reid.* Captain Reid commanded the privateer *General Armstrong.* He was attacked in the harbor of Fayal on September 26, 1814, by boats from three British men-of-war. Captain Reid drove them off, killing and wounding 135 officers and men. The frigate *Rota* compelled him to run his ship ashore and destroy her before capture. He received the commendation of Congress and a sword from the State of New York.—*Nautical Gazette.*

THE TRIALS OF THE SCOUT CRUISER SALEM.—Few events of recent years have attracted more attention among marine engineers, and particularly those of the navy, than the trials of the scout cruiser *Salem*, recently completed at the Fore River Works. This is due to the fact that she is equipped with American turbines of the Curtis type, and that in these trials, for the first time, this type has had an opportunity to be tried out under equal conditions against the Parsons turbines, and also against reciprocating marine engines of the standard type. The opportunity for this comparison was afforded by the construction for the United States Navy of three fast scout cruisers, which are identical in everything except their motive power. The *Birmingham* is driven by reciprocating engines, and the *Chester* and *Salem*, respectively by Parsons and Curtis turbines. The trials in each case consisted of standardization runs over a measured-mile course; a full-power run for four hours; a 24-hour run at 22½ knots, and a 24-hour run at a cruising speed of 12 knots. The details of the trials of the *Birmingham* and the *Chester* have already been published in earlier issues of the *Scientific American*, and below we give a digest of these trials for comparison with the results obtained in the more recent tests of the *Salem.*

COMPARATIVE TRIALS OF SCOUT CRUISERS.

I. STANDARDIZATION TRIALS, ONE-MILE RUNS.

	"Birmingham."	"Chester."	"Salem."
Fastest run on course	25.34	26.22	26.88
Mean of 5 fastest runs	24.50	25.07	25.95
Revolutions per minute	202	550	378

II. FULL-SPEED FOUR-HOUR RUN.

Mean speed	24.32	26.52*	25.94
Coal per hour, pounds	29,904	38,332	38,502
Miles, per ton of coal	1.82	1.54	1.51

III. TWELVE-KNOT, TWENTY-FOUR-HOUR RUN.

Mean speed	12.22	12.2	11.93
Coal per hour, pounds	4,629	4,091	4,051
Miles per ton of coal	5.96	6.68	6.60

The *Salem* being a purely scouting vessel, everything in her design has been subordinated to speed and coal endurance. She measures 420 feet between perpendiculars, 47 feet 1 inch in breadth at the water-line, and has an official normal displacement on a draft of 16 feet 9 inches of 3750 tons, and a full-load displacement of 4687 tons. She has two masts and four funnels, and carries a light armament of two 5-inch and six 3-inch rapid-fire guns. She is also provided with two 21-inch submerged torpedo-tubes; though what in the world she is provided with these for, we are at a loss to imagine. Also it is difficult to understand why she has been given a water-line belt of 2 inches of nickel steel. Had the weight of this armor, which will act merely as a shell exploder, and the weight and space of the torpedo-rooms been devoted to coal, the radius of action of the ships would have been increased possibly 30 per cent without the least impairment of their efficiency. However, if we except side armor and the torpedo-rooms, the *Salem* and her sisters must be considered highly creditable designs, and greatly superior to the *Attentive* class of scouts in the British navy, as the accompanying tabular comparison clearly shows. An excellent fea-

	Length. Feet.	Beam. Feet.	Speed. Knots.	Draft. Feet.	Displacement. Tons.	Max. Coal. Tons.	Freeboard. Feet.
Attentive	374	38¼	25.5	13½	2,670	380	12 and 20
Salem	420	47	26	16¾	3,750	1,250	22 and 30

ture is the high freeboard, which is about 22 feet amidships and 30 feet forward. Although the lines at the bow are extremely fine, the horizontal sections flare rapidly above the water-line, and the *Birmingham* has already shown herself to be capable of steaming against a heavy sea without taking any considerable amount of water aboard.

The beauty of the under-water model of these ships, and the excellent results obtained in the recent trials, are a tribute to the excellent work now being done at the model tank at Washington, under Naval Constructor D. W. Taylor. Although at full-load displacement and fully equipped for a cruise these vessels will not displace far short of 5000 tons, their model is as fine as that of a torpedo-boat destroyer. As a matter of fact, their coefficient of fineness is 48 per cent as compared with the coefficient of 60 to 63, which is not uncommon for a transatlantic liner. An indication of the fineness of the lines is shown in the accompanying photograph, taken when the *Salem* was running just under 27 knots. The bow wave is thrown off so gently that it barely breaks abreast of the foremast. This

*Estimated and probably too high. Propellers standardized only to 25.07 knots, and slip increasing at higher speeds.

illustration makes an interesting comparison with those of several of our battleships which were given in our issue of June 13, in which the enormous bow waves thrown off by the bluffer bows of the battleship are shown with striking effect.

But the interest in these trials centers, as we have already said, in the motive power, and the determination of how far the Curtis turbine will compare in all-around efficiency with the well-tried turbines of the Parsons type. The results show that on all points of comparison it is at least as good, and in several points decidedly superior. The speed on the series of standardization runs over the measured mile was nearly a knot better; the coal consumption was practically the same; and in regard to vibration, the *Salem* was immeasurably superior, the characteristic high-frequency, lateral vibration of the Parsons-driven ships being very marked on the *Chester;* whereas, when the *Salem* was running at 26 knots and over, there was practically no vibration, even at the stern, and absolutely none forward and amidships—a fact which called forth enthusiastic comment from the seagoing officers who were aboard during the trial.

The advantages claimed for the American type of turbine, as clearly brought out in these trials, are that because they admit of a slower speed of rotation, and the use of larger propellers, it becomes possible to develop the power in two turbines working on two shafts; that it is possible with these two turbines to operate economically both at high speed and at low cruising speed; that a larger percentage of the total power can be developed when going astern; and, finally, that because of the simplicity and compactness of the plant, only from 60 to 70 per cent as much engine space is required as is necessary to secure the same results with Parsons turbines.

The engine room of the *Chester* contains six turbines, operating on four shafts. When going ahead, steam is admitted to two high-pressure turbines, exhausts from them into two low-pressure turbines, and then passes to the two condensers. It has been found impossible to run a Parsons equipment of this kind economically at the slow speed of from 10 to 12 knots, at which most of the cruising of naval vessels is done, and in order to reduce the coal consumption to a reasonable figure, it has been found necessary to provide a pair of cruising turbines, which, in the *Chester*, are mounted forward of the low-pressure turbines and upon the same shafts. When cruising, steam is led from the boiler to the cruising turbines; from them to the high-pressure, from the high-pressure to the low-pressure turbines, and from them to the condensers. With this arrangement the *Chester* showed a better economy at cruising speed than the *Birmingham;* but the arrangement is subject to the disadvantage that two extra units have to be employed, which ordinarily are idle; and, as we have before mentioned, proportionately larger engine-room space is required. The Curtis turbines, as installed on the *Salem*, however, have the advantage that the steam, always at high pressure, is fed through a series of nozzles placed around the circumference of the casing, and that the power is reduced by simply closing down the proper number of nozzles. The advantages of the Curtis system are clearly stated in the following extract from an article entitled "Experience with Marine Turbines" in the 1908 issue of Brassey's "Naval Annual": "At full load, and for turbines of large size, the Parsons system has undoubted advantages, but when it is desired to reduce the ship's speed, there is nothing corresponding to the adoption of earlier cut-off in the piston engine. The only alternative is to reduce the pressure of the steam by throttling it, and in this way some of the advantage of the expansive property of high-pressure steam—and, therefore, some measure of economy—is forfeited. The Curtis turbine has, perhaps, some advantages in this respect. The change from the kinetic energy to work is achieved by the 'impulse' due to jets of steam acting upon blades formed on 'wheels' mounted on the shaft to be rotated. The steam expands in a number of sets of nozzles or pressure 'stages' successively from the high-pressure to the exhaust end

of the turbine. Thus, after expanding in the nozzles of the first 'stage,' the steam issues in jets against the first row of buckets on the rotating wheel, a large part of the energy being absorbed. It then flows to a row of stationary vanes, which guide the steam into a second row of moving buckets. These may be followed by a second set of fixed vanes and a third set of moving ones, after which the steam leaves the 'stage,' as it is called, through a second set of nozzles, where further expansion takes place, again generating velocity. From these nozzles it flows once more in sinuous fashion through successive sets of moving and fixed blades, and thence to other 'stages.' The important point to note is that expansion of the steam takes place only in the nozzles, and not in either the fixed or moving blades. Hence the pressure of the steam does not alter between one set of nozzles and the next. At the low-pressure end the nozzles cover the whole periphery of the wheel, but at the high-pressure end they extend only over an arc often not more than one-eighth of the whole circumference. It is thus possible to reduce the power of the turbine by cutting out a proportion of the total number of nozzles, instead of by reducing the pressure of the steam supplied by throttling it at the valve. Thus, whereas in the Parsons system cruising turbines are fitted to attain reasonable economy at low speeds, they are unnecessary with the Curtis system."

Intimately associated with the success of a turbine equipment is the propeller question. From the very first, the propeller has been at loggerheads with the turbine, the former requiring moderate speeds of revolution for the best results, and the latter, particularly the Parsons type, giving its best efficiency at the highest speeds of revolution. This is particularly true of vessels of large displacement; and it has become necessary to effect a compromise, so that in the latest ships, such as the *Lusitania* and *Mauretania*, the propellers are smaller and are run faster, and the turbines are larger and are run slower, than is desirable for the best economy. No such difficulty is experienced with the reciprocating engine, where large-diameter propellers and slow speeds of revolution may be adopted without reducing the efficiency of the engines. The Curtis turbine occupies a middle position between the high-speed Parsons and the low-speed reciprocating engine; and, because of the moderate speed of revolution and the fact that the power can be developed upon two instead of four shafts, it has become possible to secure a high propeller efficiency. The efficiency of the propellers of the *Lusitania* was given by Mr. Bell, the designer, in a recent paper read in London, as only 48 per cent. The propeller efficiency of the *Salem* rose from 55 per cent at 12 knots to a maximum of 62.8 per cent at the contract speed of 24 knots, then fell, with the increase of slip, to 62.4 per cent at 25 knots and 59.4 per cent at 26 knots. This is a remarkable result for a turbine equipment, and comes pretty near to the efficiency of the propellers of the crack German liners, which have shown as high as 67 and 68 per cent. The present propellers were adopted after a series of trial runs with four different designs of propellers; one by the Navy Department; another by the Denny firm, Scotland; a third by the Vulcan Works, Germany; and the fourth by the Fore River Company. The government design broke down through excessive cavitation early in the trials. The Denny propellers showed 50 per cent efficiency at 24 knots, the Vulcan 54.04 per cent at 24 knots, and the Fore River type, which was designed by the Chief Engineer, Mr. Charles T. Edwards, showed 62.7 per cent at 24.5 knots. These propellers are 9 feet 6 inches diameter with a pitch of 8 feet 8 inches.

The standardization trials held to determine the number of revolutions of the propellers corresponding to various speeds, from 12 knots to the highest speeds of the vessels, took place off Rockland in from 40 to 60 fathoms of water. The start and end of the mile are marked by pairs of posts set up on shore, and the time is taken from the bridge from the moment that the first pair come in line to the instant that the finish line is crossed. Meanwhile, the revolutions of the engines are accurately recorded

by a mechanical counter. The effect of the tide, whose velocity is measured by a government vessel stationed at the center of the course, is eliminated by making the alternate runs with and against the tide. The *Salem* made five runs over the course, the fastest, with a favorable tide of 0.8 of a knot, showing a speed of 26.88 knots an hour, and the mean of all five runs working out at 25.957 knots. The mean displacement during the runs was 3745 tons. On the fastest run of 26.88 knots, the propellers made 382.4 revolutions per minute. The steam pressure at the steam chest on the turbines was 253 pounds. The peripheral speed of the blades, at the above speed, was 1200 feet per minute, and the horsepower was 20,200, or over 25 per cent more than was required by contract. It was estimated that the ship would make 24 knots with 16 nozzles open on the turbines; but she actually made 25.4 knots under these conditions, and 26.88 knots with the full number, 20, open. The coal used on these trials was a screened Pocahontas.

In the starting and stopping trials the engines went from full speed ahead to full speed astern in 1 minute and 30 seconds, and from full speed astern (at which they develop 70 per cent of the full-speed-ahead power) to full speed ahead in 1 minute and 4 seconds.—*Scientific American.*

ORDNANCE AND GUNNERY. TORPEDOES.

VICKERS' 4-INCH GUN FOR TORPEDO DEFENCE.—One notable outcome of the prevailing tendency in naval construction for the all-big-gun warship has been the evolution of a new type of light arm for the purpose of repelling torpedo attack. The latest weapon of this type has been designed by Messrs. Vickers' Sons & Maxim, Limited, the well-known armament builders, and constitutes one of the most important among the ordnance exhibits at the Franco-British exhibition. For this especial duty this new arm should prove highly effective. Its total weight complete with mounting is 4.2 tons, and it fires a 31-pound shell with a muzzle velocity of 3030 feet per second and a muzzle energy of 1975 foot-tons, at 15 rounds per minute, so that at a range of 3000 yards it would prove a formidable offence to mosquito craft.

The gun is of 50 calibers, its total length being 208.45 inches, the length of bore being 201.15 inches. The breech motion is of the latest Vickers single-motion pattern. The breech screw is unlocked by the horizontal swing of the hand lever, which also swings the breech screw into or out of the gun. The threads of the breech screw are disposed in segments of varying radii, which design affords a greater proportion and a more even distribution of threads as compared with the ordinary type of interrupted screws. There is a long arm connected to the breech screw, which is operated by means of a crank pinion mounted in the carrier, and this crank is provided with a roller which engages in a cam groove formed in the arm. The form of this groove, together with its position in relation to the crank pinion, is such that the maximum possible power is exerted when seating the obturator, and a locking point is secured when the breech is closed. The crank pinion is geared to the hand lever, the latter being pivotally mounted on the carrier, enabling it to swing in a horizontal plane and to lie close up to the breech when the mechanism is locked. Obturation is obtained by a plastic pad having a protecting disk and rings. The obturator is retained at the front of the breech screw by an axial vent, which at its rear extremity takes the firing gear. The latter comprises separate electric and percussion locks, which are interchangeable in working, carried in a box slide mounted on the axial vent.

The feature of these firing gears is their absolute safety, facility of assembling, and effectual extraction of the tube. A crank pinion and link operates the locks, causing the lock frame to slide in the box slide when the breech screw is being unlocked, actuates the extractor, ejects the fired tube, and uncovers the vent to admit of the insertion of a new tube, while

the firing gear has a special device for retracting the firing pin or needle before any movement of the lock frame in the box slide. There is a double-action trigger pull to the percussion lock, so that the gun can be fired from either side. The breech mechanism is also fitted with a light shot tray mounted on the face of the breech, and operated by a crank on the hinge pin of the carrier. As the breech mechanism is swung open this shot tray is pulled in a lateral direction, and by means of grooves which engage with studs in the face of the breech, is raised automatically to the loading position.

A forged steel plate of U section forms the cradle of the mounting, having bronze strips at the front and rear ends on which the gun slides during recoil. The cradle is fitted with front and rear bronze caps for supporting the running-out spring case and also the cross-connected sights. The cradle trunnions are of steel screwed into position. The recoil cylinder is screwed to the underneath rear portion of the cradle, the screws passing through lugs formed on the recoil cylinder. The rear end of the latter is screwed to receive the rear cylinder plug, which is fitted with glands and packing for the forged steel piston rod. The valve key is of the ordinary rectangular pattern, with its upper edge formed of suitable varying depth to control the recoil and to give an approximate uniform pressure in the cylinder. The rear end of the piston rod is secured to the lug on the breech ring of the gun.

The retarding ram is of manganese bronze, and is secured to the front end of the cylinder. There is a flat formed on the ram to permit the liquid to escape from inside the piston, and also to check within certain limits the running out under the influence of the springs. A hole fitted with an adjustable plug is bored through the center of the ram, and this plug can be removed from outside the cylinder and be adjusted, thereby altering the speed of the running out of the gun. The case containing the running-out springs is secured to cradle caps, and by means of a simple arrangement the spring column may be drawn out of the front end of the spring case complete for examination or any other purpose without taking off the initial compression. The carriage is of forged steel of the usual shape.

Bolted on the left-hand side of the carriage is a steel side bar carrying the elevating gear and shoulder pieces, and a gun metal side bar on the right-hand side carrying the traversing gear and shoulder piece. The elevating gear is so arranged as to enable elevation and depression to be carried out quickly, in order to follow the motion of the ship.

The electric firing gear has two pistol grips attached to suitable adaptors, which are fixed to the elevating gear bracket on the left-hand side of the mounting. Rheostats and connection pieces lead to the dynamo circuit pistol grips, and night lights are fixed on both sides of the mountings on the side bars, while the box contacts are on the right-hand side at the breech end, and a cable for firing and illuminating the night sights is disposed on each side of the mounting, together with suitable cable eyes for fixing.

The sighting gear comprises two telescopes on either side of the mounting, controlled by gearing to give the requisite movement in the vertical and horizontal planes. The two telescopes move synchronously by the gearing, being directly cross connected. The sights are carried by brackets formed on the two cradle caps, rigidly connected together by means of the running-out spring case of the mounting. The complete sighting gear together with the cradle caps can be withdrawn or replaced on the cradle without any interference with the sight adjustments. The deflection dial and gear are mounted on the right-hand side, and the range dial and gear on the left-hand side of the gun mounting. The telescopes are of two types, one 5 to 12 variable power for night use, and the other 7 to 21 variable power for day use.

The pointer of the range gear is electrically operated by means of a small motor actuated by current received from a range transmitter placed

in the fire-control station. The electric motor and gear are carried in a small box oscillating on a journal formed on the back of the range dial casing coincident with the center of the dial, and the oscillation of this box imparts a certain additional movement to the dial pointer. Oscillation is controlled by a bell crank receiving its movement from a groove cut in the back of the range dial. One arm of the crank is formed as a quadrant, and fitted with a sliding piece to which is pivoted one end of the link connecting to the oscillating box. As the sliding piece is moved along the quadrant the movement to the oscillating box is increased or decreased, and in this manner compensates for variation in muzzle velocity, attributable to wear of the gun barrel or loss in temperature of the charge. The position in which to fix the sliding piece is shown by a graduated strip provided on the quadrant.

Normally, the system of using the sight is as follows: The pointer is electrically moved from the transmitter in the fire-control station, and the sight is elevated until the arrow on the dial agrees with the pointer. The sight is then at the elevation shown on the transmitter, with the necessary correction for change in velocity due to wear of gun barrel, etc. When the electric control is interrupted, the pointer is used as an index and the sight is elevated until the desired range is indicated opposite the pointer. The deflection gear is also fitted with a pointer controlled by a transmitter in the control station.

The principal features of the range control transmitter are a hand-operated rotary controlling switch and an electric motor geared to a pointer traversing round a dial on the front of the containing box. The motor drives the pointer spindle carrying the pointer through gearing, and special arrangements are incorporated to prevent the motor armatures overheating. The dial is graduated similar to the range dial for the gun sight. The range being determined, the handle is operated until the pointer of the transmitter indicates the correct number of yards. As the motor transmitter is synchronized with that of the sight, the pointer on the latter moves to a corresponding position, thereby showing the requisite elevation. The deflection transmitter is similar to the range transmitter both in its design and operation, only the dial is graduated to correspond with the deflection dial on the gun sight.

The gun is mounted on a steel plate pedestal of conical form fixed to a base plate, which has a central boss bored and slotted to receive a bearing plate containing a ball race, the latter supporting the pivot stem of the carriage, and upon which the whole of the training mass revolves.

The weapon forms a very handy and powerful unit for the special work for which it has been designed. The weight of charge and projectile is 44.25 pounds, of which the projectile weighs 31 pounds. It will penetrate at muzzle 16 inches of wrought iron plate and 12.4 inches of mild steel plate. The rapidity of its fire would enable it to riddle a destroyer at a range of 3000 yards.—*Scientific American.*

THE 13.5-INCH GUN.—There have been both assertions and denials in the press respecting the introduction of a larger gun for the primary armament of our larger *Dreadnoughts*, that are to be laid down in the immediate future. There is little doubt, however, but that a 13.5-inch gun will at no distant date find a place on board our battleships. It does not follow that our "capital" ship needs to be continuously increased in size—a matter against which we recently lodged an emphatic protest—so that a longer-range and more powerful gun may be introduced. Guns of increased size can be carried in medium-sized battleships, as they have been carried before in the British Navy. The old battleships of the *Royal Sovereign* class carried 13.5-inch guns as their primary armament. These guns were, of course, much lighter than a new weapon of that caliber is likely to be, as there must be much added length to a new gun to get the increased range demanded for modern naval fighting. An inch on the

size of the bore of a large gun makes an enormous difference to the weight of the projectile, as is shown by the fact that the weight of the 13.5-inch shot will probably be a full 400 pounds heavier than the present projectile for our 12-inch weapon. This is an increase of almost one-third of metal in an inch-and-a-half of caliber. The stowage room required for ammunition is likewise increased by a larger gun; but all this is quite consistent with a larger gun for smaller ships, and that is the solution we hope to see the authorities adopt in regard to the problem of modern sea-fighting.—*United Service Gazette.*

PRESERVING CORDITE GUNCHARGES.—It is satisfactory to learn that the magazine cooling arrangements, which are being so rapidly installed in our largest battleships and cruisers, are giving good results; and have thoroughly re-established confidence in our primary naval propellant. Although our own navy has been peculiarly free from magazine explosions, caused by the rapid deterioration of cordite, yet it is not to be wondered at if the constant accidents in nearly every other navy but our own, should tend to shake the faith of our officers and men. As a matter of fact the British authorities initiated a searching test, directly after the destruction of the French battleship *Jena*, from a magazine explosion, and a large amount of cordite was found to be in such an unsafe condition as to make its instant destruction desirable; and no hesitation was shown by naval officers on foreign stations in adopting this course. The cooling arrangements have not only completely restored confidence, but the life of cordite is likely to be prolonged by a lower temperature in our ships' magazines. In the end, therefore, there will be permanent economy by its introduction. The first cost of fitting cooling arrangements in all the magazines of our men-of-war will probably exceed £500,000; which is the sum that has up to the present been voted for the work. All new ships are having the plant built into them, and the cordite test throughout the fleet has been stiffened; while all charges showing signs of deterioration are at once put aside for practice firing from the guns.—*United Service Gazette.*

It is reported that at a recent target practice on the German battleship *Pommern* one of the 17-cm. guns was fired when so trained that its projectile struck another 17-cm. gun, putting it out of action. Fortunately no one was injured.

A large battle-practice towing target was launched from Messrs. Gill & Sons' shipbuilding yard at Rochester on July 17. It is one of the largest ever built for the Admiralty, measuring 141 feet in length, and 5 feet in breadth, with a draft of water of 20 feet. Upon this is built a superstructure of lattice work, 90 feet by 30 feet, which forms the actual target for firing at with the big guns of the battleships. A novelty about this target is that the firm built it upside down, so that as soon as the displacement during the launching operation was sufficient it turned turtle, and came down into its designed flotation; its total weight is 170 tons. This is the second of the series that the firm has built, the first being handed over to the Chatham Dockyard authorities on Saturday, for the forthcoming practice of battleships at sea.—*United Service Gazette.*

The armored cruiser *Good Hope*, flagship of Rear-Admiral Sir Percy Scott, has earned a most creditable record in the gunlayers' tests just concluded. With every type of gun carried she has beaten all records of previous years, the average number of hits on the target per minute for each type of gun being as follows: 9.2-inch guns, 3.5 hits; 6-in. guns, 6.6 hits; 12-pounder, 6.3 hits; 3-pounder, 9.0 hits.

The *Good Hope* had to steam at a speed of about 12 knots, and her gunners were required to fire at a target measuring only 80 square feet, which was just under a mile distant. With her 9.2-inch guns the cruiser scored 14 hits out of 18 rounds fired, and with her 6-inch guns, 106 hits out of 140 rounds fired.

With her 12-pounder guns the battleship *New Zealand* has made 74 hits in 119 rounds, and with her 3-pounder guns 112 hits in 179 rounds.

The *Black Prince* with her 9.2-inch gun scored 32 hits in 50 rounds.

The battleship *Magnificent*, with an aggregate of 83 rounds, scored an average of 5.16 hits per gun, and a total percentage of 74.71.

The *Majestic*, with an aggregate of 80 rounds, registered an average of 4.58 hits per gun, her total percentage working out at 68.75.

The cruiser *Talbot* made 53 hits out of 83 rounds with her 6-inch guns.—*Page's Weekly*.

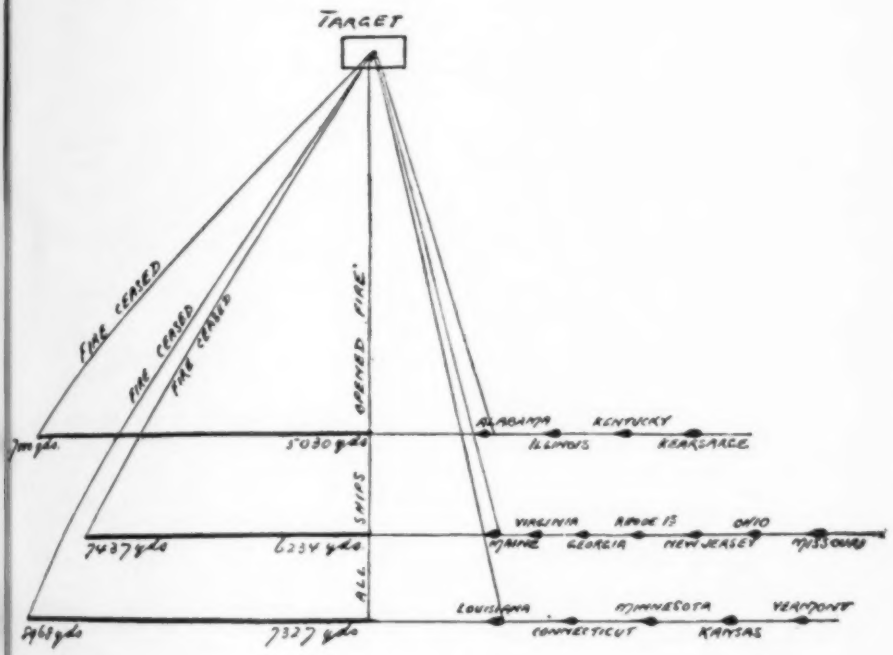

DIAGRAM 1.

ARTILLERY DEVELOPMENT IN THE UNITED STATES NAVY.

BATTLE PRACTICE IN 1907.

(Extract from an Article in the *Marine-Rundschau* for May, 1908.)

Firing took place in Cape Cod Bay during September and October, 1907, at long ranges, against a target 9 m. (29.5 feet) high and 18 m. (59 feet) wide, which was anchored. The ships steamed past at a speed of 10 knots at fighting ranges which varied according to the class and age of the vessel. Marking buoys were not placed, so that the distances had to be judged. Fire was opened when the target was on the beam, and lasted for eight minutes. It was, therefore, a case of firing at increasing ranges, the practice being based on the idea of the "running fight." The ranges for the individual ships are shown in Diagram 1. In order to prevent any misconception it may be mentioned that each ship made the run and fired separately.

The following average hits per cent were obtained:

30.5-cm. (12-inch) and 33-cm. (13-inch) guns	30.7 per cent.
17.8 cm.* (7-inch) guns	.27 " "
12.7-cm. (5-inch), 15.2-cm. (6-inch), and 17.8-cm. (7-inch) guns	.16 " "

In the American Navy, from these results, the conclusion has been drawn that the heavy gun is the more suitable for firing at long ranges, not on account of the effect on the target, but on account of the greater "danger" space. It appears that the same view is held in England, as, according to the statements in the *Memorandum* on the English shipbuilding program, 1905-06, it has been the more favorable chance of hitting rather than the greater bursting or piercing effects, which, with the acceptance of the probability of actions being fought at long ranges in the future, has banished medium guns from the *Dreadnought* type in favor of a one-caliber heavy armament.

The results, as regards hits obtained, are generally praised by the American technical press. It cannot be denied that there is some justification for this, as although the height of the target was considerable and exceeded the corresponding dimension of a battleship, the narrowness of the target considerably increased the necessity for accurate training, and caused misses by shots passing to one side or the other of the target. That varying results were obtained by the individual ships is attributed to the ranges, in the case of those ships which obtained unsatisfactory results, having exceeded those laid down.

Apart from the long ranges, the real novelty of the "battle practice" lies in the fact that the exercise, through the simultaneous firing of heavy and medium guns, reproduced war conditions, which in previous practices have not received such special attention. As regards this point, the views of the American press, which are that the "battle practice" has actually reproduced all the conditions of a modern naval battle, may, therefore, be considered as correct. However, it is doubtful whether situations will not arise in war where the conditions will vary considerably from the form of "sham" action chosen. Although the moden battleship, simply by reason of the ratio of its length to its breadth, can bring most guns to bear on the beam, so that simple line-ahead is naturally the favorite tactical formation, still evolutions for the improvement of the tactical position are conceivable—and from the experiences of the Russo-Japanese war even practicable—which will, perhaps, produce more difficult firing conditions than the "battle practice." It has, apparently, not been possible to wholly get rid of their "record target practice" scheme, with the advantages of which officers and men are too deeply inoculated. It is, however, to be taken for granted that further changes will take place; the first indications have already appeared in the professional papers. Commander Quinby, in the *Proceedings of the United States Naval Institute*, in an article entitled "Systematic Preparations for Battle," has proposed that targets (pontoons) for towing be constructed, so that moving (towed) targets can be fired at. Quinby demands, if his proposal is realized, that a solemn oath of secrecy regarding the results of the firing be obtained from each and every witness. This demand is diametrically opposed to previous custom, the publication of all results being considered the best method of interesting the masses of the nation in gunnery, the most important of all the branches of the Service, in order indirectly to create an incentive for the crews of the ships, especially the gun crews. What has induced the American officer named to propose such a sharp reversal of procedure can only be conjectured. He considers that the results must be kept secret, because in the future firing practices will approximate as closely as possible to war conditions, and the publication of the results would give a definite basis for estimating

* This is probably meant to be 8-inch.—P. R. A.

what the fleet is capable of. Or, in other words, the exercises will completely lose their sporting character, and will become of so much value for war that the communication of information concerning them to anyone outside the Service would be prejudicial to the military interests of the country.

Quinby puts forward another revolutionary proposal for the judgment of public opinion. He wishes to break down the principle of only firing with service ammunition, and desires the introduction of tube cannon, 4.7-cm. (1.85-inch) for the medium guns, and 7.6-cm. (3-inch) for the heavy guns. If it is borne in mind that, under the present conditions, the whole year's ammunition allowance of a ship is expended on two firing days only, one in the spring, the other in the autumn, and, moreover, that the training of the gun-layers could be carried on by means of aiming apparatus and aiming rifles only, then the conclusion can here be drawn that the proposal is worthy of consideration, as firing, like all physical exercises, needs continuous training in order that efficiency be not lost. Wear of guns and the great expense, however, prohibits training with service ammunition being continuous.

Quinby's proposals for the introduction of tube cannon acquire additional interest from their being extended to show how this American naval officer considers such gunnery training should be carried out.

According to his scheme, the following training is proposed as the normal:

a. Anchored target;

b. Run of ship at angle of 60° with direct course and at known speed of 12 knots;

c. Opening of fire at not less than 2700 m. (2953 yards);

d. No marking buoys.

Before we go on to the description of the firing procedure itself, we must say a few words concerning the fire-control system, in order to make the following clear.

The fire-control position is, corresponding with the English arrangement, on the foremast. The *personnel* belonging to the control detachment are stationed in a crow's nest attached to the topmast and in the fighting top. In the crow's nest are the spotters, in the top the distance judgers, the order-transmitters and the gunnery officer. The orders are first transmitted to a central exchange, which is situated under the armored deck. We are not able to form a definite opinion as to whether communication is effected by means of telephones, mechanically-worked indicators or voice-pipes, or visually by means of dials. In the central exchange there is an extensive telephone installation, which is in connection with all the gun positions. Calls appear to be indicated by lamp signals, that is, optically. The reason why such a high position is chosen for the fire-control *personnel* is to be sought in the system, which rests on the estimation of the distance a shot falls short or over the target. It is obvious that for the effective determining of this distance by the spotters, the highest possible position is necessary. Of the fire-control detachment, which, of course, must be sheltered as far as possible, the spotters alone have to be in a lofty, unprotected position. They are selected from officers and specially trained intelligent men. Spotting is of two kinds, horizontal and vertical; by the former the distance which a shot falls from the target is directly estimated, whilst with the latter the vertical angle of the splash from the lower edge of the target is estimated in order to calculate the distance at which the shot falls. The former method is generally preferred. Judging distances, at the ranges at which firing is now carried out, namely, up to 8000 m. (8750 yards), and perhaps even beyond, is undoubtedly a very difficult matter. Estimating shots falling in front of the target, *i. e.*, shorts, is, of course, easier than estimating shots falling beyond it. It is possible that the spotter, in the course of his work, adopts certain standard values.

The details of Quinby's scheme of training may now be given:

The first distance is determined by the range-finder. The ranging is carried out by a gun of the heavy artillery. The latter, and not the medium artillery, is probably selected because the more reliable results are generally expected from the heavy guns, on account of the flatter trajectory and the smaller influence of weather conditions. The amount of the alteration of range is calculated beforehand for a fixed period of time with the given course and speed. From this, it is evident that the firing carried out is "interval firing." The length of the interval is regulated according to the rapidity of fire of the guns. For the heavy artillery it is, therefore, fixed at 45 seconds. In his training scheme, Quinby supposes the first shot to be estimated as 500 yards short. After 45 seconds the second shot falls, the range ordered for it having been increased by 500 yards, less the reduction of the distance during the firing interval. It again falls short, but close to the water-line of the target; the range must now be changed by adding only about half the danger space and subtracting the reduction of the distance during the firing interval. The next shot must then be a hit, and, according to Quinby, after the second shot the gun-range for the battery can be considered as determined, so that with the third shot fire by salvos can be commenced from both the heavy and medium artillery. The interval of 45 seconds is maintained by the heavy artillery during the salvo firing, whilst, by utilizing their greater rapidity of fire, the medium artillery fire every 12 seconds. We have not, therefore, to consider here irregular rapid fire, but regular salvo firing, which facilitates observation on account of the clearly defined form of the splashes which rise simultaneously at regular intervals. By suitable alterations in the tangent-scale, Quinby then apparently proposes the battery should be kept on the target. It is not likely that the medium and heavy guns, on account of the different firing intervals, receive separate tangent-scale instructions, as the control of the whole of the artillery is in one hand. The following three points are characteristic of the proposed procedure:

1. Ranging by single shots from the heavy artillery.
2. The strictly observed firing intervals.
3. The expressed endeavor to proceed to salvo firing as quickly as possible.

It is noteworthy in the procedure suggested by Quinby that there is no ranging by the medium guns. It has previously always been emphasized in articles in the American and English press, that one cannot directly transfer to the medium artillery gun-ranges obtained by the heavy artillery, on account of the different ballistics; but that, on the contrary, a separate, though shortened, ranging is, in all cases, necessary for them. Quinby proposes to get over this difficulty by a so-called calibration; that is, a comparative firing of the individual calibers to fix the varying factors, which are to be embodied in tables. The outsider naturally cannot decide whether these proposals are practicable. The motive of the proposal for calibration is to be sought in the endeavor to arrive at the highest possible intensity of fire in the shortest time.

Commander Quinby is so enthusiastic in his appreciation of calibration that he desires to extend its employment to fleets; within a squadron comparative firings should be carried out in order to fix tables for the seven calibers from ship to ship. The object of the proposal is apparently that in a fleet action the ranging can be carried out by the flagship, and the remaining ships, which will be kept informed of the ranges by signal, can effectively open fire at a given time in their turn.

As we have seen above, Quinby proposes to calculate the change of distance in the interval of time from the actual fighting position.

Commander Niblack, another American naval officer, distinguished for his literary activity, has recently made public a proposal for placing the hypothetical calculation of the alteration in the distance on a real basis. He wishes to see the navigating officer brought to the assistance of the

gunnery officer in the following manner: Before the opening of fire the navigating officer is to take the bearings of the leading and the last ship of the hostile line, whilst the gunnery officer simultaneously decides the distances at which the two ships are by means of his range-finder. The results will be laid down on squared paper, and after a certain time, the procedure will be repeated. In this way is obtained, graphically represented, the alteration in the distance and, simultaneously, information concerning the course and speed of the enemy, two results which personal observation, without mechanical assistance, can scarcely arrive at. The method proposed by Niblack is illustrated in Diagram 2. Although it is unquestionably to be preferred to a rough estimate of the alteration in the distance, based on more or less reliable data, this method must also be

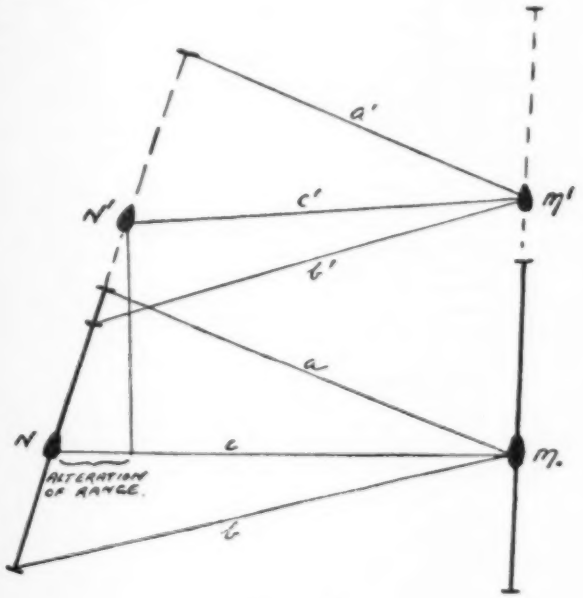

DIAGRAM 2.

regarded as imperfect. The course, formation and speed of the opposing fleets are regarded as constant. If these change, then the method is inaccurate.

A method, universally applicable, for solving this, the most difficult of all the problems which the long-range action presents, judging the alteration in the distance, Commander Niblack, with this proposal, has, in any case, not found, interesting as it is in itself, and capable of being of great service under certain fixed conditions.—*Royal United Service Institution.*

MARINE TURBINES AND GAS ENGINES. LIQUID FUEL.

THE MARINE GAS ENGINE. ITS DEFECTS AND ITS MERITS.—Since the paper enforcing the potentialities for success possessed by the marine gas engine was communicated to the Institution of Naval Architects about a year ago by Mr. James McKechnie, of the Vickers Company, interest in the subject has increased. Progress toward the solution of the problems

has been made, principally in details. But we are yet some way short of the bold step attributed by some of the daily papers to the Admiralty of contemplating the adoption of gas engines in the battleship to be laid down at Portsmouth under this year's naval program. The engineering authorities at the Admiralty prefer—and very properly so—to proceed upon sure basis, and the adoption of a gas-engine propelling installation will not be undertaken until exhaustive trials have been made, ashore and afloat, with the two small gas-engine sets still under construction. These two engines, with their producers, have been under order for a long period, a fact suggestive of the difficulties connected with the application of the system for marine purposes. For land stations, principally for the driving of electric generators, engines having cylinders developing 1000 and even 1500 brake horsepower are working satisfactorily; but there are relatively very few gas engines driving ships, and the largest of these is of almost insignificant power. In this country, Mr. William Beardmore, of Glasgow, has done much toward practical tests on board ship. The promise of success is now greater than in the earlier stages, because the great advantages of the system are now realized and the exact nature of the difficulties to be overcome is recognized. Once a diagnosis is correctly established, the cure is rendered more easy.

The advantages to be obtained from an installation of large size for marine propulsion are a saving of one-third of the space occupied by machinery, and a reduction of the total weight of machinery of possibly one-fourth. While the engine itself would have to be much heavier than a steam engine of the same power, the necessary gas producers would be much lighter than the steam boilers. As the gas engine and producer have a thermal efficiency about double that of the combined thermal efficiency of the steam engine and boiler, it should be possible to get a horsepower at the propeller for 1 pound of coal per hour, and also to obtain it from a cheaper grade of coal than can be used to advantage in a boiler. The last-named advantage will appeal strongly to owners in the mercantile marine, as it will enable the fuel cost of transport per ton-mile to be considerably reduced. Gas producers, when once charged, will go on making gas for several hours without further attention. In Beardmore's tests on board ship the producer, once charged, runs for 10 hours without attention. The same large force of stokers needed for a steam installation of any size will not therefore be required. Where there are many producers they would be charged in succession, and not more than two or three in any one watch. There would be considerably less than one-quarter the amount of ashes to handle in a given time, and there should be no clinker at all. There would be no smoke, and, therefore, the large funnels, with their wind resistance, would not be present. The space usually occupied by uptakes would also be saved. This advantage would be of considerable value to naval vessels by enabling them to almost get into range before their presence could be detected. It must be remembered that each and every cylinder in a gas engine is a complete engine in itself; and should one or more break down, the disabled cylinder could be put out of operation, and the propeller turned as long as there was a single cylinder left in working order. It is only necessary to remove the connecting rod, and the rollers that are operated on by the cams, in order to disconnect a cylinder—a much lighter job than would be required in the case of a steam engine, though the weight to be handled might be greater.

The disadvantages of gas propulsion for marine use, though many in number, are not by any means insurmountable. The chief objection seems to be the very high temperature that obtains in the cylinders when they are of large size, and the consequent liability of the valves to score and give trouble, finally resulting in a complete temporary stoppage, which would be exceedingly inconvenient, if not dangerous, at sea. There are several methods of reducing this excessive temperature, such as making the engine of relatively long stroke, diluting the charge with a surplus of

air or some of the exhaust gases, increasing the volume of water circulating in the jackets and pistons, or injecting water into the cylinder during the combustion, etc. Valves, if of large size, can readily be water-jacketed. They can also be double-seated, and thus cause the speed of the hot gas through them to be reduced, and the work required to lift them to be lessened. Another objection has been the great size and weight of the crankshafts and connecting rods, framing, etc., in order to withstand the heavy and violent shocks incidental to all gas engines. Here again the relatively long-stroke engine will score, and by adopting a cycle of operations in which heat is added at constant pressure rather than at constant volume, the violence of the shocks can be reduced, and a lower temperature of combustion obtained at the same time. It has been considered a disadvantage that most gas engines are fitted with trunk pistons, and that therefore the connecting-rod pin is inaccessible, and the piston, when worn, has to be entirely renewed. But when gas engines are built especially for marine use, they will be of such a size that they will have thin water-cooled pistons, be double-acting, and be fitted with the ordinary cross-heads and slides used upon steam engines; or if trunk pistons are used, they will be fitted with adjustable shoes to take the wear in the wake of the connecting-rod pin.

It is generally considered to be a difficult matter to make a gas engine reversible, but this is only because it has generally been attempted with the usual revolving cam gear, and on engines of comparatively small size. On large engines, oscillating instead of revolving cams can be used with advantage, and these can be operated by the well-known Stevenson link motion or by the Joy, Marshall, or other radial reversing valve motion, worked by compressed air when the engines are very large.

A special compressor, driven by an independent gas engine, will always form a part of a marine gas engine installation, because compressed air will be required for starting the main propelling engines, blowing the whistle and siren, working the reversing engine, circulating and other pumps, steering engine, capstan, deck winches, ash hoists, etc., which are now part of the recognized outfit of the modern steamship. Under certain circumstances, all this work might be done by electricity, in which case a separately-driven electrical generator would take the place of the air compressor. A disadvantage of the gas engine for marine propulsion is its want of flexibility in the rate of revolution at which it can be driven, but there are several ways in which this can be met, such as cutting off the gas supply to one or more cylinders, building the engine in two or more distinct units which can be readily connected up or disconnected, applying the total power on three or more shafts, so that one may run ahead and two astern, or *vice versa*, so that a ship of large total power may be run at very slow speed when necessary.

A mechanical disadvantage of the gas engine, when used for marine propulsion, is the uneven turning moment, especially when run on the four-stroke cycle. It is, of course, much better on the two-stroke cycle, but as in the latter case twice the amount of hot gas has to pass through the exhaust valve in a given time, special provision has to be made to meet and overcome this difficulty. Three double-acting cylinders, acting on cranks at 120 degrees apart, is probably the smallest unit that can be relied upon to work satisfactorily, and even then it would be necessary to employ a fly-wheel.

Another mechanical difficulty is in so regulating the power that it shall follow the sudden variation in the resistance, due to the propeller being partially lifted out of the water when the vessel pitches; but some form of high-speed centrifugal governor arranged to cut out or throttle the gas supply, relieve the pressure in the cylinders, cut out the ignition, or a combinaton of two or more of these methods, should be able to meet the difficulty.

What to do with the exhaust from the marine gas engine is also quite a difficult problem to settle, but as the object sought to be attained is both to cool and reduce the volume of the exhaust gases as rapidly as possible, some form of surface condenser, in combination with an injection of part of the cooling water into the exhaust pipe, ought to meet the case. The cooled gases could also be afterward discharged overboard below the surface, and thus secure perfect silence. Objection has been made to the gas producer on board ship that poisonous gases are liable to leak out and either kill the crew or cause disastrous explosions, but if operated under the suction system this does not hold, since any leak would be into, and not out of, the producer. If the producers are operated on the pressure system, it is only necessary to surround the producer and all the gas pipes with an outer airtight shell, and force the supply of air through the intervening space on its way to the producers. In this way any leak that could occur would be pure air, either into the ship or into the producers or gas pipes. If more than one producer were in use, it would be the duty of the attendants to regulate the amount of gas furnished by each, in accordance with the reading of a pyrometer fitted to each one, so that the temperature of combustion in each was the same. This would not be any more difficult than the work of regulating the feed water to a battery of steam boilers.—*Engineering.*

OIL FUEL DEVELOPMENTS.—The two 18-knot turbine steamers which Messrs. Cammell, Laird & Co., Ltd., of Birkenhead, are building for the *Campana Peruana*, of Callao, will, it is said, burn oil exclusively. In fact, but for the necessity of using coal between this country and the Brazilian port, there would be no provision at all for that kind of fuel on board. Oil is very plentiful in Peru. So considerable, indeed, is the supply that steam engines and boilers are rapidly being taken out of factories and oil engines installed in their places. Even now there is a wide margin for export, and developments which are in progress will make it still larger. But the necessity of negotiating the Horn in order to reach the markets of Europe is a drawback. A pipe line across the Isthmus of Panama is talked about, however, as a means of overcoming this difficulty. The ships on the Pacific side would thus discharge into ships on the Atlantic side, and the cost of transport would be considerably reduced. The growing use of oil fuel is a subject which is attracting more and more attention, and fresh installations are being watched very keenly. The whole subject is of real importance.—*Page's Weekly.*

OIL VS. COAL AS FUEL IN BRITISH NAVY.—The British Admiralty has decided that in future all destroyers and torpedo-boats shall be constructed to use coal as well as oil fuel. For the last three years all torpedo vessels built for the navy have been constructed to burn oil alone, and as the result of this innovation and the introduction of the turbine great ease in stoking and a remarkable increase in speed have been obtained. The change which is now to be made is not due to any failure or defect in the oil-burning system, says the *Hampshire Telegraph*, but is designed to provide against accidents and contingencies such as may arise in war. There is as yet no certain supply of oil fuel in the United Kingdom, and every gallon of oil would have to be imported. Thus security against any interruption of the oil supply is attained by fitting torpedo craft with furnaces which can burn either oil or coal. All the modern battleships and cruisers of the navy are constructed so as to consume either coal or oil. The oil is used when spurting and forcing the pace. In this connection we note that shale oil, a heavier oil than crude petroleum, either American or Russian, is reported by Admiral Selwin to exist in the United Kingdom in such quantities that "if the whole of the British shipping took to burning oil fuel, it could be supplied them from their own country at a far lower price, considering its evaporative value, than could ever be thought possible with coal."—*Nautical Gazette.*

STEAM-ELECTRIC MARINE PROPULSION. THE EFFICIENCY OF A POSSIBLE SYSTEM OF THE FUTURE.—A paper, by Mr. William P. Durtnall, entitled, "The Generation and Electrical Transmission of Power for Marine Propulsion and Speed Regulation," was read before the Institute of Marine Engineers at a special meeting. Leading up through the stages of development in reciprocating engines to the adoption of steam turbines in ship propulsion, the author pointed out the few but important disadvantages involved in the direct-coupled turbine. It was necessarily designed to run at very low speed to permit the use of a propeller of high propulsive efficiency, and consequently its diameter and weight were increased to a very great extent. The blade clearance was also greater, to allow for expansion and contraction, involving higher consumption and leakage of steam. There was also the difficulty of reversing, and the increased consumption per horsepower when working below full load and speed. Tests on the *Lusitania* had shown an increase in consumption from 14.46 pounds to 26.53 pounds of steam per shaft horsepower per hour when speed was reduced from 25.4 to 15.77 knots. The ability to maneuver was of little importance with ships making long runs, but very important in short-voyage vessels and ships of war, in which frequent starting and stopping and maneuvering in and out of harbor or in squadrons was necessary. To meet these requirements, astern turbines, of about one-third the total ahead power, and coupled to separate propeller shafts, were carried. The dead weight was therefore only partially utilized. Full power speed at reverse was only possible with a complete duplication of turbines, but the safety thereby secured was possibly of more importance in short-trip vessels than the increased weight involved. In order, therefore, to secure the complete success of the steam turbine for ship propulsion, means would have to be devised to allow the turbine to run at high speed and the propellers at comparatively low speed, so securing economy in both cases, and also to provide reverse motion for all shafts. After alluding to mechanical, hydraulic, and compressed air devices which had been tried and found inefficient, the method of electrical power transmission was stated to be that in which the greatest possibilities lay. This system supplied the very elements required to take advantage of high-speed turbines, saving weight and securing high economy in steam, by utilizing these to drive electric power generators, the current so generated being used to drive low-speed motors coupled to moderate-speed large-bladed propellers of high efficiency. This method of transmission would do away with the necessity of extra turbines, shafts, and propellers for reversing. The turbine generator would always run in one direction as regards speed rotation, while the motor could be reversed and efficiently run in either direction. Moreover, the direction of rotation and speed could be instantly changed to meet all conditions in practice, and this very important feature could be utilized with the utmost economy even at the lowest speeds and powers. The electric motor, as well as the turbine and generator, had also the capability of standing very severe overloads for short periods without damage. The large power conductors need only be broken under no-voltage conditions, and the control could be operated from the bridge when desirable.

The author was of opinion that for marine propulsion electrical power transmission could only be successfully effected by polyphase alternating currents, with synchronous generators and squirrel-cage induction motors, on account of the low cost and weight per horsepower, absence of commutators, and high efficiency of these machines. In generators of this type the armature was a stationary closed ring, with the winding imbedded in slots round the inner face, inside which the field magnet revolved. The main current was generated in the stationary ring and taken off direct, without any of the intermediary devices necessary when collecting current from a rotating source. The field magnet received its exciting current from a small direct-current machine, mounted on the generator shaft. This current, which only amounted to about 2 per cent of the generator output, was

delivered to the revolving field through simple collecting rings. It was of importance to note the exceptionally high efficiency, light weight, and low steam consumption of such combinations as converters of mechanical into electrical energy. The efficiency varied from 85 per cent in small sets to 98 per cent in large sizes, such as used for traction generating stations; the weight was between 35 pounds and 22 pounds per kilowatt output continuous rating, according to speed and other circumstances; while the steam consumption in 7500-kilowatt sizes, running at 750 revolutions per minute, with 160 pounds steam pressure at the stop valve, 150 degrees superheat, and exhausting into 27½-inch vacuum, was only 13.5 pounds to 14 pounds per kilowatt-hour, including the steam which is used for auxiliaries.

As regards the induction motor, its powerful starting torque, light weight, simplicity, low cost of construction, mechanical strength, durability, and running characteristics, made it especially suitable for marine work. As there was no commutator and no sparking limit the output could be carried much higher per unit weight than in other machines. These motors could be built for marine work of from 1000 to 10,000 horsepower continuous rating, weighing 35 pounds to 20 pounds per brake horsepower, with an efficiency of 93 to 97 per cent. Although polyphase motors were termed non-synchronous they always tended toward synchronism, and with squirrel-cage rotors the variation in speed from light to full load seldom exceeded 5 per cent, even in small sizes, and would probably not exceed 1 per cent in large sizes. The main working current passed through the stationary part of the motor only, facilitating strong and reliable construction for the conductors and rendering the machine so simple as to require no skilled and very little unskilled attention with consequent low cost of maintenance.

Assuming a vessel of 4000 horsepower fitted for electric propulsion with four propellers taking 1000 horsepower each at 250 revolutions per minute, the motors would be polyphase induction type with squirrel-cage rotors and with stators wound for full-, half-, and quarter-speeds. The generating plant would comprise duplicate sets of turbo-alternators and exciters capable together of supplying 3250 kilowatts, and running at 1500 revolutions per minute, with 150 pounds steam pressure and 150 degrees F. superheat. These alternators would be two-pole machines, and the motors would be wound for 12 poles giving a reduction of 6 to 1. For half-speed a second winding would be arranged for 24 poles, giving 12 to 1 reduction with two sets of windings in parallel, and for quarter-speed this winding would be arranged for 48 poles, giving 24 to 1 reduction; the synchronous speeds would thus be 250 revolutions per minute for full speed, 125 revolutions per minute for half-speed, and 62½ revolutions per minute for quarter-speed.

At full speed of the vessel the propellers would require 4000 shaft horsepower, and the turbo-generators would be run in parallel delivering 3250 kilowatts to the motors. The consumption of steam would be 13 pounds per shaft horsepower or 16 pounds per kilowatt hour, equivalent to a total consumption of 52,000 pounds of steam per hour. Compared with propeller turbines the consumption in which, under similar conditions and speed, was of the order of 22 pounds of steam per shaft horsepower or a total of 88,000 pounds per hour for 4000 horsepower, the saving in favor of electric transmission was no less than 41 per cent. At half-speed of the vessel about 600 shaft horsepower would be required, less than half load on one turbo-generator, and this would allow the duplicate set to be shut down. Estimating the motors at 60 per cent efficiency on half-speed the generator would deliver 740 kilowatts at its full normal speed, and take 24 pounds of steam per kilowatt hour, equivalent to 17,760 pounds per hour, as against 28,200 pounds for propeller turbines, thus saving at least 37 per cent in steam when the vessel is moving at half-speed. The weights of the electrical transmission plant in this example would be:

	Tons.
4,000 B. H. P. at 35 lbs. per H. P. developed.....	say 62½
Conductors, switch-gear, etc.....	say 6
Two turbo-generators as above.....	say 70
Condenser for above.....	say 19
Steam piping, etc.	say 13
Air pump and motor.....	say 6
Circulating pump and motor.....	say 7½
	184

While the weight of the direct-coupled turbines and part of the propeller shafts, tunnels, etc., including condenser, steam pipes, etc., air and circulating pumps—which would have to be arranged efficiently to deal with the 88,000 pounds of steam—would be at least, taking the speed of the turbines at 250 revolutions per minute, 148 tons, showing that the electrical machinery would be about 25 per cent heavier, but it is here necessary to point out that that only applies to the plant from stop valve to propeller shaft connections.

This comparison does not cover the saving in power and weight of boilers. On the other side of the stop valve the weight of cylindrical boilers (empty), mountings, funnel, forced-draft gear, pipe work for steam-water and exhaust, pumps, gratings, platforms, etc., is stated to be 180 pounds per indicated horsepower in reciprocating engined ships. Taking a vessel carrying two reciprocating condensing engines developing together 4000 brake horsepower—equal to 4700 indicated horsepower at 85 per cent mechanical efficiency—the weight of boiler and stokehold equipment would be 377 tons. At 16 pounds of steam per indicated horsepower, including auxiliaries and losses, the total consumption would be 75,200 pounds, or 200 pounds of steam per hour per ton of boiler-room equipment.

At this rate the boiler-room equipment on the electrically equipped vessel, taking 52,000 pounds of steam, would be 260 tons, while for the propeller-turbine vessel the weight would be no less than 440 tons. There would thus be a saving for equal propeller horsepower of 180 tons weight—that is, no less than 40 per cent. Comparing coal consumption, the author took it that, with good Welsh coal, hot feed, and clean flues, it was possible to evaporate 10 pounds of water per pound of coal burned, and at this rate a turbine-propeller vessel would burn 8800 pounds per hour, as against 5200 pounds by the electric-propeller vessel—a saving of 1.6 tons per hour. This represented a saving in dead weight carried of about 230 tons on a six days' trip, with correspondingly reduced running cost. Electrical propulsion should be of considerable interest to cargo vessel owners, as not only could dead weight and cost be saved, but the propeller speed could be kept as low as necessary and usual in these slow boats to secure the best economy at the propeller; and it would also be possible further to reduce the propeller speed if necessary to meet practical conditions by slight increase in the weight of the motors only, the generating plant weight remaining the same. The author pointed out that the conclusions deduced should not be considered as perfectly definite, on account of the widely different conditions in practice; but the paper was chiefly put forward to lead naval architects and marine engineers to give serious consideration to the question of electric propulsion.

Reference was made to other systems proposed, and a large number of lantern views and drawings exhibted. The original Hart-Durtnall continuous-current system employed series-wound generators and motors direct-coupled to six propeller shafts, but was for small powers only. In Mr. Parsons' system the exhaust was taken from the main reciprocating engines to drive a low-pressure turbine coupled to an electric generator delivering current to a motor on the engine propeller shaft. Single-phase commutator motors had been proposed in one German and one American system; in the former case with three-phase, and in the latter with single-

phase generation, and in one other American proposition three-phase non-synchronous generation was included. A Swiss proposition was to use direct-coupled turbines at the vessel's full speed and a separate turbine driving an electric generator supplying current to electric motors on the main turbine shafts for reducing the vessel's speed or reversing. The reverse, however, in most of these systems was only one-third of full power. The Hart-Durtnall three-phase system, as applied to marine propulsion in conjunction with internal combustion engines, providing a reverse and three ahead speeds with control from the bridge, was referred to, but the author pointed out that until a satisfactory internal combustion engine of large power was produced, the steam turbine would remain the most simple, light, and efficient prime mover.—*Scientific American.*

ZOELLY MARINE TURBINES FOR GERMAN SCOUT CRUISERS.—Escher, Wyss & Co., of Zurich, Switzerland, are building a 20,000-horsepower marine turbine engine and a new German scout cruiser of 4500 tons' displacement. The German cruiser is building at Kiel, and the 20,000-horsepower engines are expected to afford a speed of 26 knots per hour. The Escher-Wyss turbine engines are of the new Zoelly type, and their development for marine purposes is of very recent date. It will be seen from the displacement of the German cruiser and the horsepower involved that the designs called for speedier vessels than the new American scouts *Salem, Birmingham,* and *Chester.*

The new turbine is a parallel-flow "simple action" one with pressure stages, and with a minimum number of stages of nine or ten. It differs from the reaction turbine in several essential points. In the latter the pressure is converted into steam partly in the guide apparatus and partly in the turbine wheel itself, so that there is always a difference in pressure between the two sides of the wheel. This sets up longitudinal thrust and occasions some loss of steam through the clearance between the wheel and the turbine parts. In order to reduce the loss of steam the radial clearance is brought down to a minimum, and unless there is very careful workmanship may give rise to fatal results to the engine. In order to take up the axial thrust recourse is generally had to a special balancing piston, and this piston also rotates.

In the case of the Zoelly turbine, the pressure is converted into steam exclusively in the guide apparatus. The steam enters the turbine wheel with its pressure preserved and is not lowered in passing. As there is neither axial thrust nor leakage a large radial clearance can be allowed between the turbine wheels and stationary parts. In this new Zoelly steam turbine, which may also be described as a simple-action turbine, the steam jet from each guide apparatus acts on one wheel only. The steam on being admitted to the turbine passes on to the first guide apparatus, in which it is partially expanded, and so acquires kinetic energy, and is further directed at the proper angle to the running wheel, which absorbs the energy corresponding to the first expansion. The steam then passes to the second guide apparatus, where the second expansion takes place, and in like fashion the steam works through all the wheels and passes out to the exhaust pipe. Each guide apparatus consists of a disc divided along its horizontal diameter, and is made of cast steel or cast iron in one piece with a distributing ring. The blades are of nickel steel, and the whole apparatus is very solid in construction. The construction of the runners appears perfected to a high degree of reliability. Each turbine wheel disc is made of high grade steel forged in one piece at the boss, and is carefully turned and polished all over. The blades are thickened toward the center in order to make the stress of the metal the same at every radius.

The Zoelly has only about one-third to one-fifth the number of blades of a multi-stage reaction steam turbine of the same output, and the average velocity of the steam being low the wear on the blades is not appreciable. The Zoelly seems to be regarded in high favor in Germany, and is especially commended by reason of the little care and attention that is necessitated.

The engine installation for the German scout involves four screws with two 6000-horsepower engines working the outboard screws, and two 4000-horsepower engines working the inboard screws. The four turbines are grouped in water-tight compartments, so that each engine is independent of the others. Each turbine is provided with a complete set of auxiliary engines. The turbines are designed for economical working at reduced speeds. For long cruises the lower-power turbines only are used, and the heavier engines are only brought into play for high speeds. The number of turbine revolutions will vary between 380 per minute for 14-knot speed and 580 for full speed. These revolutions apply only to the lower-powered engines; for the heavier engines the maximum number of revolutions will be 400 per minute. Each shaft possesses an independent astern turbine, which further assures great facility in maneuvering.

In addition to the scout cruiser, Escher, Wyss & Co. have designed turbine engines for a new 450-ton torpedo-boat destroyer, and still another installation for a 650-ton torpedo-boat destroyer. In the 450-ton boat the engine output is designed at 9000 brake horsepower. In the case of this vessel there will be three shafts, and the number of revolutions will vary between 500 and 820, according to the speed. The maximum number of revolutions of the outboard engine will be 675 per minute. The center engine is the lowest in power and is designed for economical working during long cruises at low speeds.

In the 650-ton torpedo-boat destroyer the designs call for a turbine output varying between 13,000 and 14,000 brake horsepower. Each turbine is constructed for economical working at low speed, and each shaft is designed for ahead and astern working. The maximum number of revolutions at 30 knots per hour is 650 per minute. One of the above torpedo-boat destroyers is to be brought out by the German government and the other by the French government. The engines for the French boat will be built at home.

In the 4500-ton German scout, steam will be used at pressures varying from 14 to 15 atmospheres. This, of course, is superheated steam, and I understand that Schultz superheaters will be used in conjunction with Thornycroft-Schultz tubular boilers.

The blades of the Zoelly marine turbine are built of nickel, and the frames of Siemens Martin steel. Krupp furnishes the greater part of the steel that is used in the construction of these engines. This marine type of Zoelly engines differs from the land type of machine in being more solidly built. The Escher-Wyss engineers declare that the turbine is as economical as the reciprocating engine.—*Nautical Gazette.*

MISCELLANEOUS.

THE NAVAL STRENGTH OF THE NATIONS. By Sidney Graves Koon.—As has been the case continuously for nearly 200 years, Great Britain occupies the premier naval position at the present time, with 193 ships of upward of 9000 tons each, active and building, as compared with 117 for Germany, 110 for the United States and 96 for France. The list following tabulates the situation at the moment for the leading eight powers, with the results of such combinations as the Anglo-Saxon, the Franco-Russian, the Dreibund (Germany, Italy, and Austria), and the sum of the two latter:

	Ships.	Displacement. Tons.	Guns.	Average Tons.	Average Knots.	Ships over 10,000 tons.	Ships over 14,000 tons.
Great Britain	193	1,897,860	7,540	9,833	20.15	103	20
United States	110	837,208	3,955	7,611	18.97	41	12
France	96	788,573	3,235	8,048	19.09	37	6
Germany	117	780,720	3,844	6,673	19.1	33	9
Japan	48	422,709	1,829	8,806	19.97	18	4
Russia	50	339,689	1,747	6,794	18.38	13	2
Italy	43	321,872	1,681	7,485	20.16	13	1
Austria	27	171,991	866	6,370	19.67	6	..
All others	156	558,285	3,550	3,580	17.9	3	3
Totals	840	6,118,907	28,247	7,284	19.44	267	57
Anglo-Saxon	303	2,735,068	11,495	9,027	19.79	144	32
Franco-Russian	146	1,128,262	4,982	7,727	18.87	50	8
Dreibund	187	1,274,583	6,391	6,816	19.44	52	10
Continental	333	2,402,845	11,373	7,216	19.18	102	18

Such figures as these do not tell the whole story. For instance, the fastest navy is that of Chile, with an average speed of 20.74 knots. Brazil comes next, with 20.18 knots, followed closely by Italy and Great Britain, while Argentina, with 18.88 knots, is ahead of Russia; otherwise the order may be picked from the table. In average size of ships no nation in the table has an average as great as has Austria, the lowest listed. The only ships of over 10,000 tons belonging to any nation outside the eight tabulated are three battleships building for Brazil in England, and said in some quarters to be ultimately destined for Japan.

An examination of the table shows that the Anglo-Saxon combination is superior to the five combined continental nations in displacement, guns, average size, and speed, and much superior in the number of large ships. In total number of ships only are we inferior. Of course, the large advantages accruing from a common language and common ideals would be of enormous benefit should it ever be necessary to measure strengths.

Taking up the eight leading nations in a little more detail, and omitting further all ships under 3000 tons and all unarmored ships under 18 knots, we get two tables, one covering battleships only, while the second covers cruisers, both armored and protected. In each case the divisions are somewhat arbitrary, but they are thoroughly uniform, and totally fair.

Battleships.	First class. Ships.	Tons.	Speed.	Second class. Ships.	Tons.	Speed.	Third class. Ships.	Tons.	Speed.
Great Britain	56	862,000	19.08	14	152,070	17.29	2	18,660	14.43
United States	31	445,679	18.54	..	.....	....	11	45,339	12.83
France	22	313,956	18.66	8	84,362	15.98	10	66,789	15.33
Germany	20	314,290	19.63	14	152,581	17.61	13	66,634	14.98
Japan	15	231,752	19.8	3	36,308	18.04	3	18,126	14.91
Russia	8	112,134	17.71	4	37,753	16.47	5	32,923	14.7
Italy	10	135,528	21.04	5	62,317	17.74	..	.....	....
Austria	3	43,500	20	6	55,923	20.15	5	28,549	17.02

Cruisers.	Armored. Ships.	Tons.	Speed.	First Class. Ships.	Tons.	Speed.	Second class. Ships.	Tons.	Speed.
Great Britain	35	417,360	23.01	23	213,710	20.75	39	176,320	20.11
United States	15	186,651	22.19	3	20,620	22.58	12	47,117	21.27
France	18	190,706	22.07	4	29,655	22.14	16	80,230	19.33
Germany	8	78,381	21.15	..	.....	....	27	107,996	21.84
Japan	9	81,412	21.53	1	6,500	23.7	8	33,931	21.49
Russia	6	62,644	20.67	6	38,935	23.14	6	32,100	19.46
Italy	7	61,250	21.61	1	6,000	25	3	17,303	19.44
Austria	1	7,185	22.01	..	.....	....	5	22,804	20.68

These two tables should be supplemented by another giving the totals, the total battleships and the total armored fleets, as follows:

	Grand totals.			Total armored.			Total battleships.		
	Ships.	Tons.	Speed.	Ships.	Tons.	Speed.	Ships.	Tons.	Speed.
Great Britain..	169	1,840,120	20.06	107	1,450,090	19.95	72	1,032,730	18.73
United States..	72	745,406	19.39	57	677,669	19.16	42	491,018	18.01
France..... ...	78	765,788	19.12	58	655,903	18.97	40	465,107	17.7
Germany.....	82	719,882	19.27	55	611,886	18.81	47	533,505	18.47
Japan..... .	39	408,029	19.98	30	367,598	19.77	21	286,186	19.33
Russia.....	35	316,489	18.68	23	245,454	17.87	17	182,810	16.91
Italy.....	26	282,398	20.39	22	259,095	20.37	15	197,845	20
Austria	20	157,961	19.71	15	135,157	19.55	14	127,972	19.4

One further table will conclude our study of the question. This deals with the batteries of the various ships, arranged according to the size of gun. The first column shows the number of guns of 12-inch caliber and upward carried on the ships listed, with the broadside fire in parenthesis. The second column shows the guns of 8-inch and upward, but under 12-inch; the third shows those between 3.9-inch (10-cm.) and 8-inch, while the last shows the smaller guns and torpedo-tubes:

	12-in. guns.	8 to 12 in.	3.9 to 8 in.	Smaller.
Great Britain 312 (298)		172 (134)	1,915 (1,047)	4,701
United States 172 (172)		224 (162)	728 (374)	2,230
France 103 (100)		108 (62)	859 (472)	1,870
Germany		326 (299)	741 (371)	2,187
Japan 66 (66)		126 (89)	428 (218)	1,080
Russia 50 (46)		83 (53)	379 (304)	1,035
Italy 44 (44)		97 (69)	310 (161)	788
Austria 17 (15)		63 (51)	210 (108)	448

It will be noted that, with regard to number and aggregate displacement of fighting ships, the United States, France, and Germany are running a very close race, standing in that order in armored ships, but with little room for choice. When we examine the batteries carried, however, the immense superiority of the United States in heavy guns, and particularly in 12-inch guns, becomes at once apparent. Germany has no guns over 11 inch. In those of 8-inch and upward the United States carries 396, to 326 for Germany (averaging smaller in size) and 211 for France. It will be remembered that in the war of 1812 a large part of the American success at sea was attributed, and rightly, to the American guns and the way they were handled. We have to-day a navy with heavier guns on the average than those carried by the ships of any other power, not even excepting England, and reports of target practice leave little doubt that our gunnery is without an equal on the face of the globe. So it will be seen that American traditions in this respect are being followed out in the present force in such measure that we can rightly say that "ship for ship, and gun for gun, our navy is without a peer."—*Iron Age.*

STRENGTH OF BRITISH AND FOREIGN FLEETS.—A return has been issued showing the strength of the fleets of Great Britain, France, Russia, Germany, United States, and Japan, on March 31, 1908. All vessels are shown which still retain their armaments and are not for sale. A fair comparison, says the return, may be obtained between the older vessels of each Power by reference to their respective ages, displacements, armaments, etc. Vessels are arranged in classes as follows: Battleships, coast defence vessels, armored cruisers, protected cruisers, first-, second-, and third-class, unprotected cruisers, scouts, torpedo-vessels, torpedo-boat de-

stroyers, torpedo-boats, and submarines. The number of vessels, which include both those built and building, are as follows:

	A	B	C	D	E	F	G
Battleships	67	38*	15	40	19	30	19
Coast defence vessels	0	7	2	11	0	11	1
Armored cruisers	38	22	10	10	10	15	13
Protected cruisers, first-class	21	5	7	0	0	3	2
" " second-class	42	12	2	24	4	16	11
" " third-class	16	11	1	12	12	2	8
Unprotected cruisers	1	2	2	13	0	10	7
Scouts	8	0	0	0	0	3	0
Torpedo-vessels	19	13	6	1	9	2	1
Torpedo-boat destroyers	141	42	93	58	17	20	54
Torpedo-boats	118	284	85	83	127	32	79
Submarines	60	68	36	3	6	20	12

* Six of these have been condemned.

In the above table Great Britain is represented by A, France by B, Russia by C, Germany by D, Italy by E, the United States by F, and Japan by G. The return also shows the date of launching and completion of each vessel, its displacement, horsepower, and armaments.—*United Service Gazette.*

NEW RECORD FOR COALING WARSHIPS.—The battleship *Virginia* has just established the world's record in the matter of coaling, having taken aboard 1667 tons in four hours. There is great rivalry between the crews of the warships which are making a tour of the world with regard to rapidity of getting fuel aboard.

As is well known, coaling is the dirtiest and most tedious job in the navy, but the new spirit of the service regards it as a part of the day's work. The bands play while the colliers or lighters are alongside, and competition between ships has run up the records until Rear-Admiral Sperry is highly gratified at this most recent performance. All three ships belong to the second division. They have an advantage in a gallery which runs all around the outside of the main deck and makes coaling easier than on some of the other ships, but no one assumes to detract from the excellence of their performance on this account.

First the *Georgia* took 1779 tons in five hours and twelve minutes, an average of 342 tons an hour, with 458 tons for the best hour. The *Rhode Island* next took 1710 tons in four hours and forty-seven minutes, an average of 358 tons, with 461.8 tons in the best hour. The *Virginia* then outdid them by taking 1667 tons in four hours, averaging 417 tons an hour, with 555.9 tons for the best hour.—*Nautical Gazette.*

NEW GIANT LINER FOR WHITE STAR.—Great preparations are now going on at the yard of Harland & Wolff's, Belfast, for the construction of a mammoth vessel, the *Olympic*, for the White Star Line, says *The Steamship*. She will be 50,000 tons and 840 feet long. This is 50 feet more than a *Lusitania* and *Mauretania*, which are each 790 feet long. The preparations involve the reconstruction of slips and gantries. Three slips have been turned into two. A new 200-ton floating crane; an American crane built on six pillars each 175 feet high; and a cantilever traveling crane built by Messrs. Arrol at a cost of £140,000, are part of the new equipment, the total cost of which exceeds a quarter of a million pounds.

The total cost of the vessel is estimated at over £1,500,000. The keel will be laid in September and it is expected the vessel will be launched by September, 1910, just two years in building. She will be propelled by four screws, two driven by quadruple-expansion balanced engines and two by low-pressure turbines. The speed will be over 21 knots per hour. The designs for the internal fittings are of the most elaborate and gorgeous description.—*Nautical Gazette.*

BOOK NOTICES.

"Lidgerwood Cableways, 1908."—The Lidgerwood Manufacturing Co. has just issued a new catalogue describing and illustrating Lidgerwood Cableways and their many successful applications on great engineering works and for numerous other purposes where large quantities of materials have to be hoisted, conveyed, and delivered with celerity and economy.

From cover to cover, the whole 168 pages of this book are filled with illustrations and data which are not only convincing proof of the remarkable adaptability of the Lidgerwood Cableways to the purposes of the engineer and contractor, but the whole forms a treatise upon cableway practice which has no equal in print. The engineering works illustrated and described where Lidgerwood cableways have been or are now playing a most important part in successful accomplishment include many of the most important projects of recent years in many parts of the world.

The skillful modifications of the cableways in details and setting to fit them for the economical conduct of the various kinds of work required are shown by profuse illustrations in half tone cuts of the finest quality and the descriptive text makes clear the important conditions met in the prosecution of each of these enterprises.

Among the important new pieces of engineering were Lidgerwood Cableways are in use which are pictured and described are the excavation of the New York State barge canal at Pendleton, N. Y., the Great Lakes Construction Co., where a traveling cableway handles an 80-cubic-foot capacity "Clam Shell" bucket; the excavation of the new 22-foot West Neebish channel in the St. Mary's river by the McArthur Bros., and Grant, Smith & Co., where four traveling cableways were used; the building of the dam and power-house of the Rainy River Improvement Co., at the International Falls, Rainy River by the Maquire-Penneman Co., using a long span radial cableway; building locks and dams Nos. 10 and 11 on the Kentucky river by the Mason and Hoge Co., Inc., the T. H. Riddle Construction Co., and H. E. Talbott & Co., and lock and dam No. 4 on the Ohio river, by the Baker Contracting Co., the Blewitt Falls Dam of the Rockingham Power Co., by W. R. Bonsal & Co.; the McCall Ferry Improvement Co.'s hydro-electric plant on the Susquehanna river; the Cross river dam on the Croton river, built by the McArthur Brothers and Winston & Co., and the Wachusett dam built by the same contractors; the Great Cataract dam in Australia being constructed by the New South Wales government where electrically operated cableways are employed; the wonderful Roosevelt dam of the U. S. Reclamation Service on Salt river, Arizona, where J. M. O'Rourke & Co. are using three electrical operated cableways; the Shoshone dam in Wyoming, the highest masonry dam in the world, where the U. S. Fidelity & Casualty Co. have two cableways located

in a most novel manner; the Pathfinder dam, on the North Platte river which the Geddes & Peerie Stone Co. are building by means of two cableways for the U. S. Reclamation Service; the New Orleans Filtration Works, where Black & Laird employ two traveling cableways; the Pittsburg Filtration Works where four traveling cableways are in use by the P. A. Gillespie Co.; the Columbus Filtration Works, for which Westmater & Casey use two traveling cableways; sewer construction in Rio de Janeiro, Brazil, and many other interesting examples of excavations, bridge building, quarrying, cargo handling, fuel handling, ash disposal, and other work. A very interesting plant shown is a cableway for unloading and loading ships at Nome, Alaska, with other interesting cableway plants for handling cargo under novel conditions at Manaos on the Amazon river and on the shores of Hawaii, Sandwich Islands; the construction of fortifications; many applications in quarrying and mining, in road construction, log handling, and numerous other commercial purposes.

LIST OF PRIZE ESSAYS.

1879.

Naval Education. Prize Essay, 1879. By Lieut.-Com. A. D. Brown, U. S. N.

NAVAL EDUCATION. First Honorable Mention. By Lieut.-Com. C. F. Goodrich, U. S. N.

NAVAL EDUCATION. Second Honorable Mention. By Commander A. T. Mahan, U. S. N.

1880.

"The Naval Policy of the United States." Prize Essay, 1880. By Lieutenant Charles Belknap, U. S. N.

1881.

The Type of (I) Armored Vessel, (II) Cruiser best suited to the Present Needs of the United States. Prize Essay, 1881. By Lieutenant E. W. Very, U. S. N.

SECOND PRIZE ESSAY, 1881. By Lieutenant Seaton Schroeder, U. S. N.

1882.

Our Merchant Marine: The Causes of its Decline and the Means to be taken for its Revival. "Nil clarius aquis." Prize Essay, 1882. By Lieutenant J. D. J. Kelley, U. S. N.

"MAIS IL FAUT CULTIVER NOTRE JARDIN." Honorable Mention. By Master C. G. Calkins, U. S. N.

"SPERO MELIORA." Honorable Mention. By Lieut.-Com. F. F. Chadwick, U. S. N.

"CAUSA LATET: VIS EST NOTISSIMA." Honorable Mention. By Lieutenant R. Wainwright, U. S. N.

1883.

How may the Sphere of Usefulness of Naval Officers be extended in Time of Peace with Advantage to the Country and the Naval Service? "Pour encourager les Autres." Prize Essay, 1883. By Lieutenant Carlos G. Calkins, U. S. N.

"SEMPER PARATUS." First Honorable Mention. By Commander N. H. Farquhar, U. S. N.

"CUILIBET IN ARTE SUA CREDENDUM EST." Second Honorable Mention. By Captain A. P. Cooke, U. S. N.

1884.

The Reconstruction and Increase of the Navy. Prize Essay, 1884. By Ensign W. I. Chambers, U. S. N.

1885.

Inducements for Retaining Trained Seamen in the Navy, and Best System of Rewards for Long and Faithful Service. Prize Essay, 1885. By Commander N. H. Farquhar, U. S. N.

1886.

What Changes in Organization and Drill are Necessary to Sail and Fight Effectively Our Warships of Latest Type? "Scire quod nescias" Prize Essay, 1886. By Lieutenant Carlos G. Calkins, U. S. N.

THE RESULT OF ALL NAVAL ADMINISTRATION AND EFFORTS FINDS ITS EXPRESSION IN GOOD ORGANIZATION AND THOROUGH DRILL ON BOARD OF SUITABLE SHIPS. Honorable Mention. By Ensign W. L. Rodgers, U. S. N.

1887.

The Naval Brigade: its Organization, Equipment and Tactics. "In hoc signo vinces." Prize Essay, 1887. By Lieutenant C. T. Hutchins.

1888.

Torpedoes. Prize Essay, 1888. By Lieut.-Com. W. W. Reisinger, U.S.N.

1891.

The Enlistment, Training and Organization of Crews for our Ships of War. Prize Essay, 1891. By Ensign A. P. Niblack, U.S.N.

DISPOSITION AND EMPLOYMENT OF THE FLEET: SHIP AND SQUADRON DRILL. Honorable Mention, 1891. By Lieutenant R. C. Smith, U.S.N.

1892.

Torpedo-boats: their Organization and Conduct. Prize Essay, 1892. By Wm. Laird Clowes.

1894.

The U.S.S. Vesuvius, with Special Reference to her Pneumatic Battery. Prize Essay, 1894. By Lieut.-Com. Seaton Schroeder, U.S.N.

NAVAL REFORM. Honorable Mention, 1894. By Passed Assistant Engineer F. M. Bennett, U.S.N.

1895.

Tactical Problems in Naval Warfare. Prize Essay, 1895. By Lieut.-Com. Richard Wainwright, U.S.N.

A SUMMARY OF THE SITUATION AND OUTLOOK IN EUROPE. An Introduction to the Study of Coming War. Honorable Mention, 1895. By Richmond Pearson Hobson, Assistant Naval Constructor, U.S.N.

SUGGESTIONS FOR INCREASING THE EFFICIENCY OF OUR NEW SHIPS. Honorable Mention, 1895. By Naval Constructor Wm. J. Baxter, U.S.N.

THE BATTLE OF THE YALU. Honorable Mention, 1895. By Ensign Frank Marble, U.S.N.

1896.

The Tactics of Ships in the Line of Battle. Prize Essay, 1896. By Lieutenant A. P. Niblack, U.S.N.

THE ORGANIZATION, TRAINING AND DISCIPLINE OF THE NAVY PERSONNEL AS VIEWED FROM THE SHIP. Honorable Mention, 1896. By Lieutenant Wm. F. Fullam, U.S.N.

NAVAL APPRENTICES, INDUCEMENTS, ENLISTING AND TRAINING. The Seaman Branch of the Navy. Honorable Mention, 1896. By Ensign Ryland D. Tisdale, U.S.N.

THE COMPOSITION OF THE FLEET. Honorable Mention, 1896. By Lieutenant John M. Ellicott, U.S.N.

1897.

Torpedo-boat Policy. Prize Essay, 1897. By Lieutenant R. C. Smith, U.S.N.

A PROPOSED UNIFORM COURSE OF INSTRUCTION FOR THE NAVAL MILITIA. Honorable Mention, 1897. By H. G. Dohrman, Associate Member, U.S.N.I.

TORPEDOES IN EXERCISE AND BATTLE. Honorable Mention, 1897. By Lieutenant J. M. Ellicott, U. S. N.

1898.

Esprit de Corps: A Tract for the Times. Prize Essay, 1898. By Captain Caspar Frederick Goodrich, U.S.N.

OUR NAVAL POWER. Honorable Mention, 1898. By Lieut.-Com. Richard Wainwright, U.S.N.

TARGET PRACTICE AND THE TRAINING OF GUN CAPTAINS. Honorable Mention, 1898. By Ensign R. H. Jackson, U.S.N.

1900.

Torpedo Craft: Types and Employment. Prize Essay, 1900. By Lieutenant R. H. Jackson, U.S.N.

THE AUTOMOBILE TORPEDO AND ITS USES. Honorable Mention, 1900. By Lieutenant L. H. Chandler, U.S.N.

1901.

Naval Administration and Organization. Prize Essay, 1901. By Lieutenant John Hood, U.S.N.

1903.

Gunnery in Our Navy. The Causes of its Inferiority and Their Remedies. Prize Essay, 1903. By Professor Philip R. Alger, U.S.N.

A NAVAL TRAINING POLICY AND SYSTEM. Honorable Mention, 1903. By Lieutenant James H. Reid, U.S.N.

SYSTEMATIC TRAINING OF THE ENLISTED PERSONNEL OF THE NAVY. Honorable Mention, 1903. By Lieutenant C. L. Hussey, U.S.N.

OUR TORPEDO-BOAT FLOTILLA. The Training Needed to Insure its Efficiency. Honorable Mention, 1903. By Lieutenant E. L. Beach, U.S.N.

1904.

The Fleet and its Personnel. Prize Essay, 1904. By Lieutenant S. P. Fullinwider, U. S. N.

A PLEA FOR A HIGHER PHYSICAL, MORAL, AND INTELLECTUAL STANDARD OF THE PERSONNEL FOR THE NAVY. Honorable Mention, 1904. By Medical Inspector Howard E. Ames, U. S. N.

1905.

American Naval Policy. Prize Essay, 1905. By Commander Bradley A. Fiske, U. S. N.

THE DEPARTMENT OF THE NAVY. Honorable Mention, 1905. By Rear-Admiral Stephen B. Luce, U. S. N.

1906.

Promotion by Selection. Prize Essay, 1906. By Commander Hawley O. Rittenhouse, U. S. N.

THE ELEMENTS OF FLEET TACTICS. First Honorable Mention, 1906. By Lieut-Com. A. P. Niblack, U. S. N.

GLEANINGS FROM THE SEA OF JAPAN. Second Honorable Mention, 1906. By Captain Seaton Schroeder, U. S. N.

THE PURCHASE SYSTEM OF THE NAVY. Third Honorable Mention, 1906. By Pay Inspector J. A. Mudd, U. S. N.

1907.

Storekeeping at the Navy Yards. Prize Essay, 1907. By Pay Inspector John A. Mudd, U. S. N.

BATTLE REHEARSALS. A few thoughts on our next step in Fleet-Gunnery. First Honorable Mention, 1907. By Lieut.-Comdr. Yates Stirling, U. S. N.

THE NAVAL PROFESSION. Second Honorable Mention, 1907. By Commander Bradley A. Fiske, U. S. N.

1908.

A Few Hints to the Study of Naval Tactics. Prize Essay, 1908. By Lieutenant W. S. Pye, U. S. N.

THE MONEY FOR THE NAVY. First Honorable Mention, 1908. By Pay Inspector John A. Mudd, U. S. N.

THE NATION'S DEFENSE—THE OFFENSIVE FLEET. How Shall We Prepare It for Battle. Second Honorable Mention, 1908. By Lieut.-Commander Yates Stirling, U. S. N.

NOTICE.

The U. S. Naval Institute was established in 1873, having for its object the advancement of professional and scientific knowledge in the Navy. It now enters upon its thirty-fourth year of existence, trusting as heretofore for its support to the officers and friends of the Navy. The members of the Board of Control cordially invite the co-operation and aid of their brother officers and others interested in the Navy, in furtherance of the aims of the Institute, by the contribution of papers and communications upon subjects of interest to the naval profession, as well as by personal support and influence.

On the subject of membership the Constitution reads as follows:

ARTICLE VII.

Sec. 1. The Institute shall consist of regular, life, honorary, and associate members.

Sec. 2. Officers of the Navy, Marine Corps, and all civil officers attached to the Naval Service, shall be entitled to become regular or life members, without ballot, on payment of dues or fee to the Secretary and Treasurer. Members who resign from the Navy subsequent to joining the Institute will be regarded as belonging to the class described in this Section.

Sec. 3. The Prize Essayist of each year shall be a life member without payment of fee.

Sec. 4. Honorary members shall be selected from distinguished Naval and Military Officers, and from eminent men of learning in civil life. The Secretary of the Navy shall be, *ex officio*, an honorary member. Their number shall not exceed thirty (30). Nominations for honorary members must be favorably reported by the Board of Control, and a vote equal to one-half the number of regular and life members, given by proxy or presence, shall be cast, a majority electing.

Sec. 5. Associate members shall be elected from Officers of the Army, Revenue Cutter Service, foreign officers of the Naval and Military professions, and from persons in civil life who may be interested in the purposes of the Institute.

Sec. 6. Those entitled to become associate members may be elected life members, provided that the number not officially connected with the Navy and Marine Corps shall not at any time exceed one hundred (100).

Sec. 7. Associate members and life members, other than those entitled to regular membership, shall be elected as follows: "Nominations shall be made in writing to the Secretary and Treasurer, with the name of the member making them, and such nominations shall be submitted to the Board of Control, and, if their report be favorable, the Secretary and Treasurer shall make known the result at the next meeting of the Institute, and a vote shall then be taken, a majority of votes cast by members present electing."

The Proceedings are published quarterly, and may be obtained by non-members upon application to the Secretary and Treasurer at Annapolis, Md. Inventors of articles connected with the naval profession will be afforded an opportunity of exhibiting and explaining their inventions. A description of such inventions as may be deemed by the Board of Control of use to the service will be published in the Proceedings.

Single copies of the Proceedings, $1.00. Back numbers and complete sets can be obtained by applying to the Secretary and Treasurer, Annapolis, Md.

Annual subscriptions for non-members, $3.50. Annual dues for members and associate members, $3.00. Life members fee, $30.00.

All letters should be addressed U. S. Naval Institute, Annapolis, Md., and all checks, drafts, and money orders should be made payable to the same.

SPECIAL NOTICE.

NAVAL INSTITUTE PRIZE ESSAY, 1909.

A prize of two hundred dollars, with a gold medal, and a life-membership in the Institute, is offered by the Naval Institute for the best essay presented on any subject pertaining to the naval profession, subject to the following rules:

1. The award for the prize shall be made by the Board of Control, voting by ballot and without knowledge of the names of the competitors.

2. Each competitor to send his essay in a sealed envelope to the Secretary and Treasurer on or before January 1, 1909. The name of the writer shall not be given in this envelope, but instead thereof a motto. Accompanying the essay a separate sealed envelope will be sent to the Secretary and Treasurer, with the motto on the outside and writer's name and motto inside. This envelope is not to be opened until after the decision of the Board.

3. The successful essay to be published in the Proceedings of the Institute; and the essays of other competitors, receiving honorable mention, to be published also, at the discretion of the Board of Control; and no change shall be made in the text of any competitive essay, published in the Proceedings of the Institute, after it leaves the hands of the Board.

4. If, in the opinion of the Board of Control, the best essay presented is not of sufficient merit to be awarded the prize, it may receive "Honorable Mention" or such other distinction as the Board may decide.

5. In case one or more essays receive "Honorable Mention," the writer of the first of them in order of merit will receive seventy-five dollars and a life-membership in the Institute.

6. Any essay not having received honorable mention, may be published also, at the discretion of the Board of Control, but only with the consent of the author.

7. The essay is limited to fifty (50) printed pages of the Proceedings of the Institute.

8. All essays submitted must be either typewritten or copied in a clear and legible hand.

9. In the event of the prize being awarded to the winner of a previous year, a gold clasp, suitably engraved, will be given in lieu of the gold medal.

By direction of the Board of Control.

PHILIP R. ALGER,
Professor, U. S. N., Secretary and Treasurer.